NATURE MAGAZINE

DECEMBER 1930
VOL. 16, NO. 6

35 ¢

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GOLDEN HOURS of sunshine and tangy air, heady as old wine, give an exhilarating joy to life in San Antonio, where Indian summer lasts all winter . . . and every day yields a new adventure!

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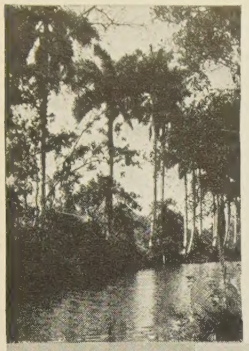

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SHADED highways of adventure . . . leading to new scenes of thrilling contentment . . . tropic valleys smiling in sunlight . . . mountain peaks brooding in purple mists . . . sun-drowsy villages — exotic vessels of the peace and passion of living . . . these are Cuba's perennial lures to the Out-of-doors. Hundreds of miles of new motor roads dip over the hills from Havana . . . through the gorgeous rural country of Cuba . . . across the valleys of Yumuri and Viñales . . . to the provinces of Pinar del Rio, Matanzas, Santa Clara, Camagüey and Oriente . . . to the Caribbean cities of Batabano, Cienfuegos and Santiago. Easy roads to out-door thrills . . . stalking deer through lush forests . . . flushing quail against a background of Royal Palm groves . . . tramping across vast plantations of tobacco, sugar and coffee . . . following jungle paths, overhung with air plants and branches of Mahogany, Granadillo, Majagua or other tree monarchs of the tropics. Here is Dame Nature in a different mood . . . languorous yet vital. ¶ For more urban open-air pursuits, you have in the seaside metropolises well-groomed golf courses . . . tennis courts . . . spirited saddle horses . . . yachting . . . deep-sea fishing . . . beaches and bathing . . . seafront promenades . . . and the rhythmic pound of the waves. ¶In Havana . . . brilliant, sophisticated, charming . . . where the gaiety and color of Old Spain are combined with modern standards of luxury and comfort . . . are the effete pleasures of horse racing . . . jai alai . . . theatres . . . dancing . . . open-air cafes . . . country club life . . . and the varied excitements of the Casinos. Here's a different winter recreation for you . . . gay living in a foreign capital mingled with the joyous freedom of rural out-of-doors . . . all within telephone's reach of your office. : : : : : :

For information, any tour bureau, or ticket office—any Cuban Consul, or the Cuban National Tourist Commission, Havana, Cuba.

PLANTING THE GARDEN, MONTH BY MONTH

By Romaine B. Ware

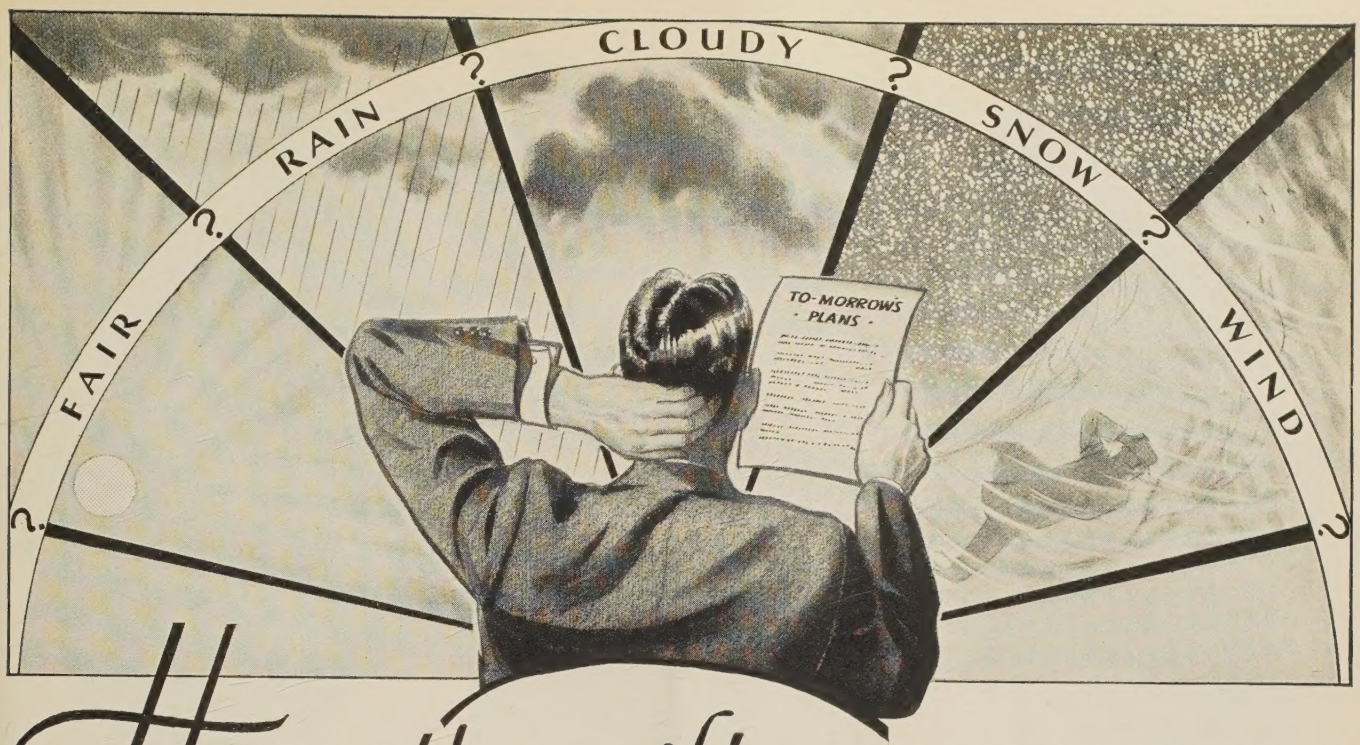
At this season most garden lovers must forego active work in the garden though in sections where the ground is not frozen it is still possible to do some planting. I remember one winter a shipment of tulips arrived very late and the ground, already frozen three inches, was opened with a pick. The planting was entirely satisfactory, as I mulched the area as soon as it was solidly frozen to prevent possible heaving by mid-winter thaws. Mulches of any kind should not be put on till the surface is frozen and then should be applied promptly. Remember, the mulch is not to keep the cold out but to maintain an even temperature until it is time for the plants to awaken in the spring.

With the extremely dry year experienced in so many sections you will find it very wise to water thoroughly, wherever possible, the last thing before the final freeze-up. If this is not done, much winter killing among shrubs, evergreens, perennials and even trees may result. The reason for this is that all plants lose moisture even during the winter and if there is no available supply to draw upon they will suffer seriously. Water is especially important with all newly planted material, which, not being fully rooted, is at a disadvantage. Evergreens, because their foliage is retained, are especially subject to winter injury. If the ground thaws out during the winter the plants should be given another good soaking. Watering late in the fall and thorough mulching immediately after the freeze-up are two of the most important considerations in winter protection.

Heavy snowfalls should be cleaned off evergreens and other shrubs to avoid damage by breaking. Many choice specimens have been spoiled from neglect of this precaution. In many sections it is wise to erect a barrier of some kind to shield exposed evergreens from prevailing winter winds and from possible burning by the brilliant sun of late winter while the plants are still frozen and dormant. In open garden plantings there is not as much danger of injury as around foundations and similar places.

There should be a place in your garden where a bird feeding station can be maintained during the winter months. Every gardener is heavily indebted to the birds for the enormous number of insects they devour. In our constant warfare with pests the legions of our feathered friends have proven of inestimable value. Their voracious appetites account for countless thousands of insect enemies. In our gratefulness to the birds, surely the least we can do is to see that they do not want for food during the

(Continued on page 338)



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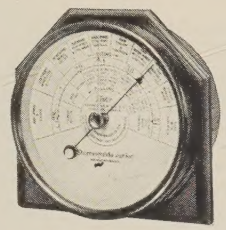

(At right) A sturdy, reliable weather forecaster. Thousands in use all over America. Walnut finished, bakelite case, aneroid movement. 4½ inch white dial. Adjustable for altitude, from sea level to 2,500 feet. Accurate, dependable. $10.

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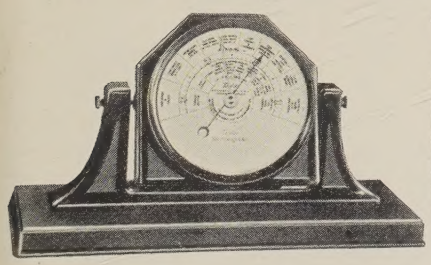

Same mechanism as No. 2258 (above). Has handsome gold-toned 4½ inch dial and classical tilting base of Walnut finished bakelite that holds dial at selected position for easy reading. A welcomed gift. $15.

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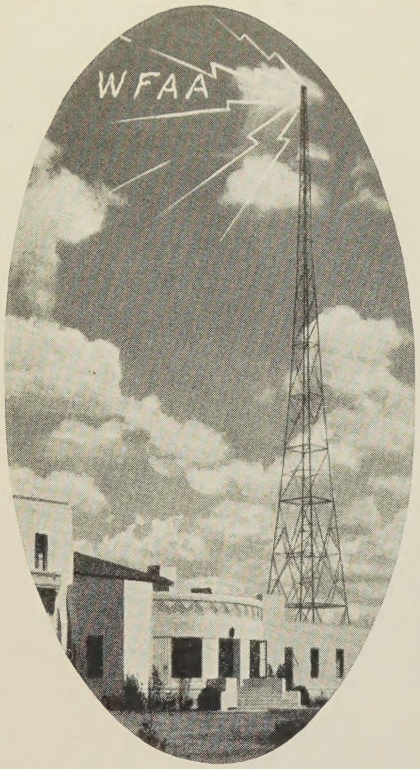


Texas on the Air

Your State—Your City

The snapshot album may well contain pictures that tell the story of your state and the city or town where you live. On week-end auto trips tuck the camera in the door pocket of the car and keep your picture-eye open. Each state has some outstanding industry, types of buildings, scenic beauty or natural products. Pictures representative of the characteristics of state or city make a fine collection to have and to preserve.

The parks, business sections, principal buildings or bits of architectural charm and the home itself are well worth recording by the camera. Above we see a striking "shot" of the big super-power radio station at Dallas, Texas. The negative was made on Panchromatic Film and a color filter was used on the camera lens. The exposure was one second at stop *f*.22.

Below we see a fine study of Dallas Hall of the Southern Methodist University. Exposure one second at stop *f*.45. The camera in each instance was, of course, held steady on a tripod.

Start to build up a picture record of your locality. The collection will be treasured and of as much interest to out-of-town and out-of-state friends as to the home folks.

Dallas Hall, Methodist University

Photographic DEPARTMENT

EDITED BY ROBERT T. LOWELL

The Christmas Spirit Recorded by the Camera

The holiday spirit is beautifully emphasized in many towns and cities by the trimming of doorways and shrubbery with strings of colored incandescent lamps. This custom is increasing in popularity each year, and when the homes in entire communities are decorated the effect is like a fairyland, especially after a light snow-

"'Twas the Night Before . . ."

fall. What chances for unusual and strikingly different pictures!

Many beginners may not know that they can make pictures at night of such illuminations. True, snapshots should not be attempted, but with a reasonably short time exposure, pictures like the one we print may be obtained.

Here is how the picture above was made. The camera was placed on a tripod and an exposure of five minutes given at stop *f*.11. People passing a house being photographed at night will not affect the result if they move rapidly across the area included by the camera lens. If street electric lights help to illuminate the house it may only be necessary to turn the decorative lights on for about a minute. Try a few exposures and pick the best.

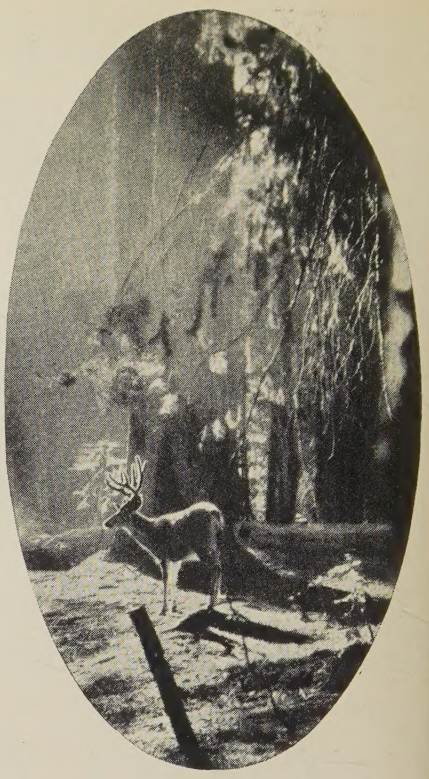
Such pictures of one's home make excellent material for the basis of decidedly attractive personal greeting cards.

Night Pictures of Wild Life

William Nesbitt of Short Hills, N. J., is, as many of us know, a pioneer in speed flashlight photography and has made remarkable night photographs of wild life. He markets an ingenious electric speed flash lamp that anyone can use and has issued a folder concerning it. The leaflet also contains much general information on flashlight photography. The inventor is also the author of *How to Hunt With the Camera.*

Constructive Criticism

The editor of this department will be glad to give helpful criticism of any pictures sent to him for the purpose Just include a few notes on how each picture was made and on the timing and light conditions.



Early Morning

Backlighting

When you got your camera and carefully read the manual that came with it—as you should—you were told to stand so that the sunlight would come from in back of you or over your shoulder. This is very good advice to follow in using the first few rolls of film.

Later on, however, we can depart from such rules, and with a little of the "knowing how" secure striking pictures with the light coming *toward* the camera. We should always, however, take great care that direct rays of sunlight do not strike into the camera lens for if they do the picture will be hopelessly fogged and ruined. Often when "shooting" into the light we can stand so that a tree, corner of a building, some projection or our hand will sufficiently shade the lens. Whatever is used we should be cautious that the thing itself is not within range of the lens.

In making backlighted pictures we should generally give a trifle more exposure than is needed for ordinary front lighting, although this depends on the effect desired. For silhouette effects a quick snapshot with a reasonably small stop opening will be required to obtain best results.

Silhouetted 1/50 seconds, stop f.22

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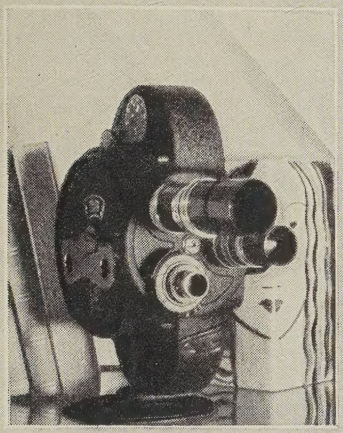
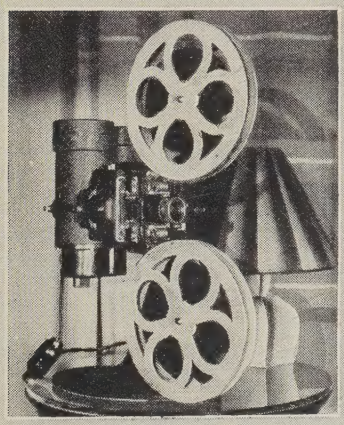
"The one thing we want—Filmo"



Filmo 70-D, "Master of all personal movie cameras." Seven film speeds, three-lens turret, variable viewfinder. $245 and up in Sesamee-locked Mayfair case.



Filmo 57 Projector. Powerful 250 watt direct lighting. Silent movement. Absolutely flickerless. Automatic operation. $198 and up with carrying case.

". . . a good soldier you've been this year. You've given us just about everything we could desire . . . everything, that is, except one thing—a Filmo movie camera. And we've waited until now to speak of it because we'd like to make our first movie on the happiest day of the year—Christmas.

"You'll want us to have a Filmo, Dad. You can have even more fun with it than with Junior's electric train. We'll have movies of the children at school, our travels and vacations. And you'll have movies of your fishing trips and your golf foursomes. And all together we'll have something infinitely fascinating and dear to us!

"With the Filmo Projector, we'll see these precious movies over and over again in the living room, keep memory alive and ever refreshing as long as we like. And we can have our own professional movies at home, too,—from the Filmo Library.

"We know we want a Filmo, because it stands to reason that a movie camera made by Bell & Howell, who make the big cameras which take the movies we see at the theater, must be finely made and dependable. Most all our friends own Filmos, too, and we know from what they say that it is so simple to operate that any of us can run it.

"We want you *in* on our gift, Dad, and you could select nothing so all-inclusive in its sentiment as Filmo. So this is your little flock's supreme desire for the year, Dad, and we know you'll be the same good sport you've always been—on Christmas morning.

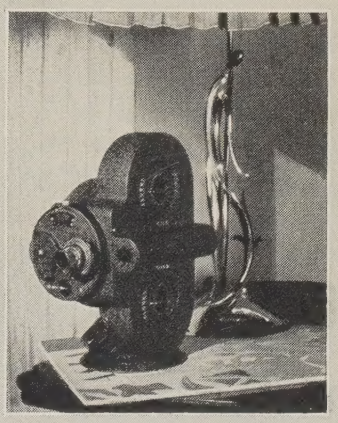
With love,

Mother Bell and Dorothy

All Filmos use 50 or 100 foot films. For black and white pictures, Filmo Cameras use Eastman Safety Film (16 mm.) in the yellow box—both regular and panchromatic—obtainable at practically all dealers' handling cameras and supplies. Filmo Cameras and Filmo Projectors are adaptable, under license from Eastman Kodak Company, for use of Kodacolor film for movies in full color. Cost of film covers developing and return postpaid, within the country where processed.

Bell & Howell Co., Dept. X, 1813 Larchmont Avenue, Chicago · New York, Hollywood, London (B & H Co., Ltd.) *Established 1907*

Filmo 75, "Aristocrat of personal moviedom." Slender, compact, highly precise. Fits the coat pocket. Choice of three colors—silver, brown, black. $92.00 and up.



Filmo 70-A. The original personal movie camera. Two speeds, spyglass viewfinder, interchangeable lens. $180 and up with leather carrying case.

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CUNARD

PLANTING THE GARDEN, MONTH BY MONTH

(Continued from page 334)

bleak days when their natural supplies are generally much limited.

There are many types of winter feeding stations that anyone handy with tools can build. They may, of course, be purchased at all prices ranging from a dollar or two for modest homes up to ten and fifteen dollars for glass enclosed patent food houses. Put one out as soon as possible. It may not be needed at the moment but any day may bring a storm that will find the birds suffering from hunger.

The winter months can well be used for reading up on various phases of gardening. There is a wide range of garden literature available. Some of it is of the "how-to-do-it" variety, while many interesting books are written in narrative style and others are purely inspirational. Most of our public libraries are well supplied with garden books and if yours is not you should make it your business to create a demand that will cause them to get a better selection. Every gardener should also own a good garden library that may be referred to again and again. A few practical books that should prove interesting to most any garden maker, follow:

How to grow Roses—Pyle—McFarland—Stevens, Macmillan 1930. *Landscaping the Home Grounds*—Ramsey, Macmillan 1930. *The Little Garden*—King—The Atlantic Monthly Press, 1921. *Studies in Gardening*—Clutton-Brock—Scribner's, 1916. *Garden Cinderellas*—Fox—Macmillan, 1929. *Rock Garden and Alpine Plants*—Correvon—Macmillan, 1930. *Peonies in the Little Garden*—Harding—Atlantic Monthly Press, 1923. *The Practical Book of Outdoor Flowers*—Wright—Lippincott, 1924. *Color Schemes for the Flower Garden*—Jekyll—Scribner's, 1919. *Aristocrats of the Garden*—Wilson—Stratford—1926.

This list is, of course, far from complete. There may be some particular phase of gardening in which you are interested. Fortunately the material is especially ample in books upon individual groups of flowers like gladiolus, iris, dahlia, bulbs, orchids and other favorites. Should your hobby be any particular group, you will find many books on the subject.

Another kind of garden literature that may be had for the asking and comes mailed prepaid is the vast array of garden cata-

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8 Power $15.20 and $24.00

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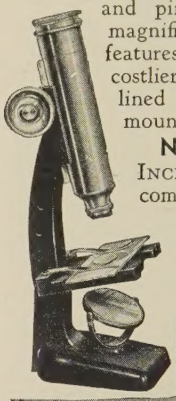

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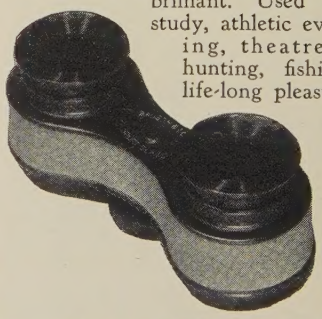

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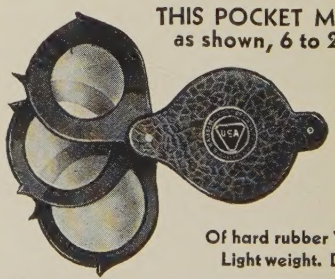

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logues, which are many and varied, and of great use. Usually written and compiled by experts, they may be employed for reference purposes, as they generally contain lists and tables of varieties for rock garden, for shady places, for cutting and for other special uses. I have catalogues five, eight and even thirteen years old that I find helpful and well worth preserving. Catalogues can be secured by writing the advertisers of this and other magazines.

Forcing bulbs in the house is a phase of floriculture in which some are very successful but others never seem to succeed. There is one kind of bulb with which every one can produce flowers almost without question. Paper white narcissuses grown in a dish and supported by pebbles are almost fool-proof. There is, however, a difference in the quality of results, depending upon how the bulbs are treated. If you simply plant them in the dish and leave them in the light and warmth of an average room they will start growth promptly and produce foliage and blooms eighteen inches or more in height. They will be so tall, however, that they may be inclined to fall over. Much the better way to handle them is to place the bulbs in the dish, fill in around them with pebbles, add water to nearly cover and place them in a cool dark place for three to six weeks. Then the root growth will start before top growth and in three or four weeks the dish will be a mass of roots and foliage with buds three or four inches high. Then when brought to the light and heat of the ordinary room they will quickly burst into full bloom while but eight or ten inches tall. As the result of ample root growth before top growth, the quality and quantity of blossoms will be better and they will last much longer. The blossoms will have better size and substance. They may be left in the cool dark place even as long as six weeks only needing proper watering. Several dishes may be planted at one time and they may be brought to the light at weekly or ten day intervals.

A WORD ABOUT THE TEXAS COVER

In presenting the cover of this Texas issue by Mr. Jex we are doing so not with the thought of providing a map that will be of any use to the automobile tourist or one that would qualify for inclusion in an economic geography. Rather the aim is to epitomize Texas in a broad way, to provide something pictorial and here and there amusing. If some communities are left off this is merely because we do not wish to crowd these maps. If some of the typical products of Texas may not be in the exact spots in point of fact, this is because of artistic considerations. Mr. Jex has done these cartoon maps for all of our special numbers and they must be considered broadly as publicizing the entire region and not narrowly.

When winter's icy blasts blow coldest—
Head South for Sunny
TREASURE ISLE

When the chill north wind fastens his icy fingers 'round the very marrow of your bones and deep-drifted snow locks you in its cold embrace . . head south for sunny *Treasure Isle!*

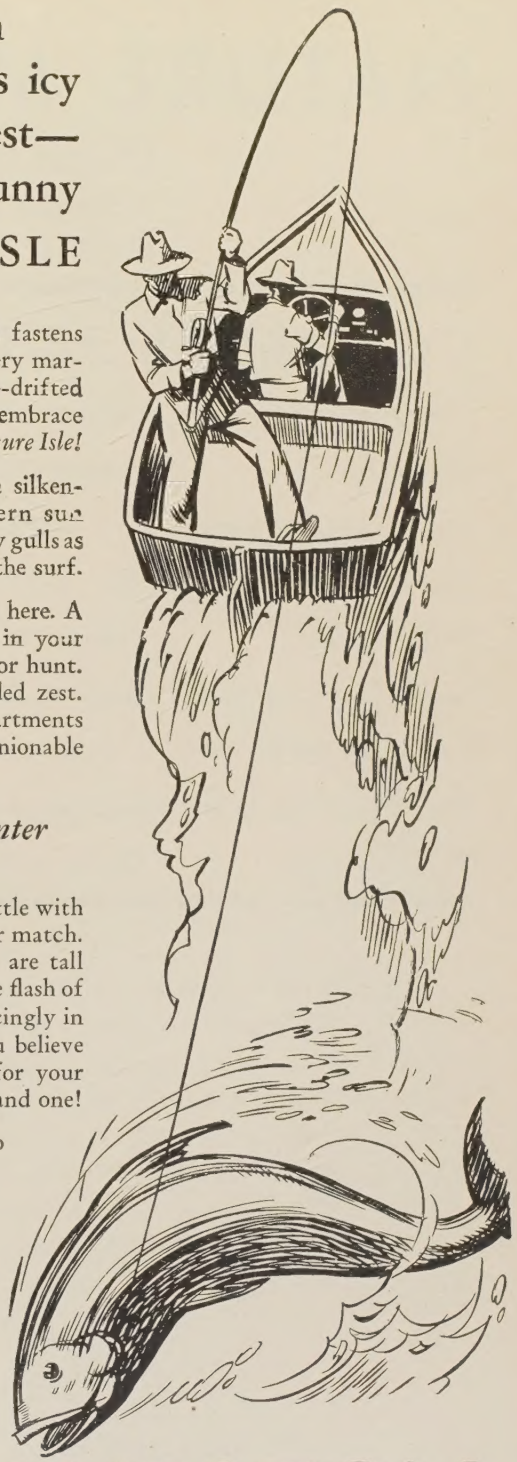
Here southern waters lap a silken-sanded beach and a southern sun glints off from restless, silvery gulls as they wheel and turn above the surf.

Palms and flowers greet you here. A tang of bracing, salt air is in your nostrils as you golf, or fish or hunt. Outdoor sports take on added zest. At comfortable hotels, apartments and camps you find companionable folk you'll like to meet.

They strike all winter on the Gulf

And if you thrill to a real battle with deep-sea sports . . here's your match. Real beauties as long as you are tall . . loiter near, waiting for the flash of your spoon as it dances enticingly in the wake astern. And if you believe not here is worthy match for your piscatory skill, then try to land one!

Why not come *this* winter to



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NATURE MAGAZINE

PUBLISHED BY THE AMERICAN NATURE ASSOCIATION

To Stimulate Public Interest in Every Phase of Nature and the Out-Of-Doors, and Devoted to the Practical Conservation of the Great Natural Resources of America

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THE LONGHORN STEER

Painted specially for the Texas
issue of Nature Magazine
by R. Bruce Horsfall

R·BRUCE HORSFALL

NATURE MAGAZINE

VOLUME 16 DECEMBER · 1930 NUMBER 6

THE TEXAN PART OF TEXAS

THE DISTINCTIVE CHARMS OF THE BIGGEST STATE

BY J. FRANK DOBIE

IT TAKES a brave Texan to predict weather at home, for everyone who lives in the Lone Star State is aware of the old proverb, "Only a fool or a newcomer will prophesy weather in Texas." But he has a ready substitute for the backbone of colloquy. It is the size of his state. And sooner or later he will launch forth on this favorite theme—one ready-made for Texans.

"Why, my friends," I once heard a patriot declaim in metaphors somewhat mixed, "Texas is so big you could cram Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, New York, New Jersey, Delaware, Pennsylvania, Ohio and most of Illinois into her petticoat

HARVEY PATTESON

THE ALAMO, SHRINE OF TEXAS LIBERTY

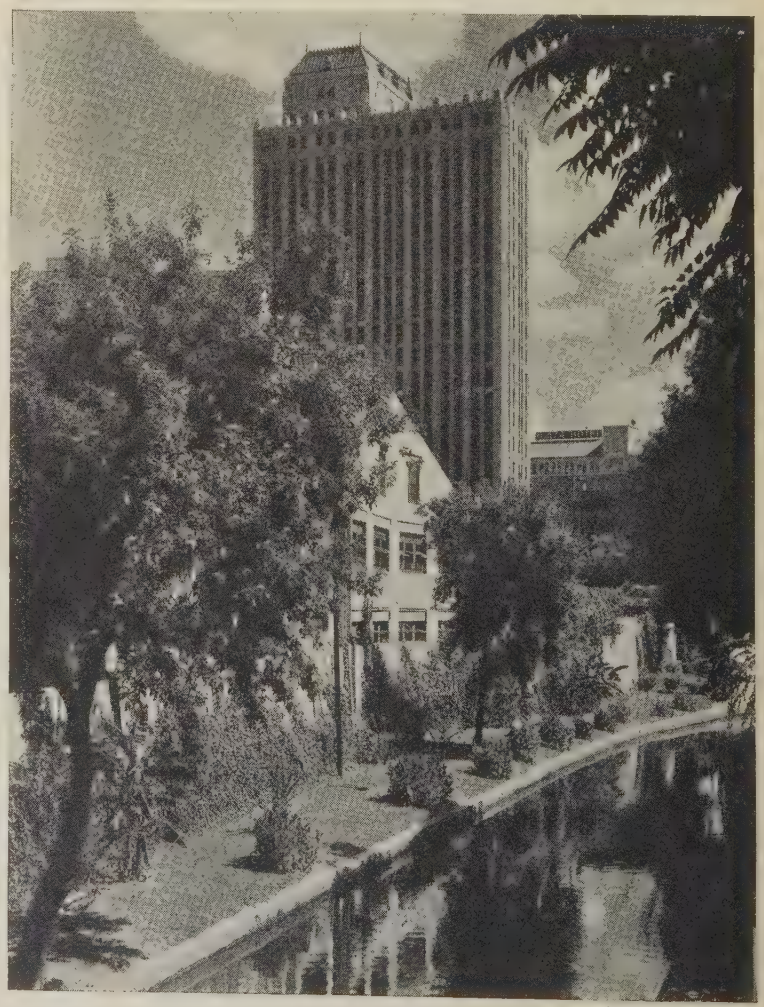
Where 183 men under W. B. Travis fought to the death to repulse a Mexican attack, and inspired the famous cry, "Remember the Alamo," which played an important part in the successful revolution

SAN ANGELO CHAMBER OF COMMERCE

ALFALFA HAY HARVEST IN CONCHO VALLEY
A scene near San Angelo, in the heart of the ranch country, where irrigation has turned many arid acres into good farm land

and still have room for ruffles. On the west she rises nearly two miles high on the desert flanks of the Rockies. On the east she nestles down against Louisiana into the swamps of the Mississippi valley and wears wistaria and magnolia in her hair. On the north, she reaches so far up that her children in Texarkana can get to Chicago quicker than they can cross their own state to Brownsville. On the south she extends right into the Gulf of Mexico, and if it wasn't for that hole of water she would reach clear to the South Pole."

In truth, so vast is the territory of Texas —it contains 262,400 square miles and has a coast line 400 miles long—and so varied are its soil, climate and occupations that it is most difficult to isolate aspects particularly recognizable as Texan. On the upper slopes of Guadalupe Peak range a few Texas bighorn sheep among flora that distinctly belongs to the Canadian Life Zone, while down along the Gulf Coast is a strip of the sub-tropics. In the Lower Rio Grande Valley, where the thermometer seldom reaches the freezing point and where the waters of the Big River are spread out to irrigate the soil, multiplied train loads of citrus fruits and winter vegetables are exported annually. For five hundred miles down the Rio Grande from El Paso—measured as the crow flies and not as the canyon twists—and then west of a line running northward through Fort Worth to Red River, an empire of range is so arid and broken that it will always be a "cow country." Much of the region is treeless and in many places the characteristic mesquite growth is so stunted that a lone horseman can hardly find enough shade beneath one of the bushes for his afternoon siesta. But away to the east swamps of cypress and forests of pine afford occupation to lumbermen, and muskrats by the millions are bred for their pelts on land as watery as the Mississippi delta. Cotton is grown all over the state, except on the upper plains and in the region too arid for dry farming, and Texas supplies one third of the nation's supply and approximately 18 per cent of the world's output. On the upper plains of the Panhandle, too high and cool for the southern product, enough wheat is raised to balance the world market in normal times. Stock-grazing, too, is an occupation recognized everywhere. Harris County has more cattle than any other county, though in southeast Texas, hundreds of miles away from the traditional "cow country" of the western part of the great state.



HARVEY PATTERSON

IN THE HEART OF A BEAUTIFUL TEXAS CITY
A river scene in downtown San Antonio where the Spanish heritage of Texas is still strong

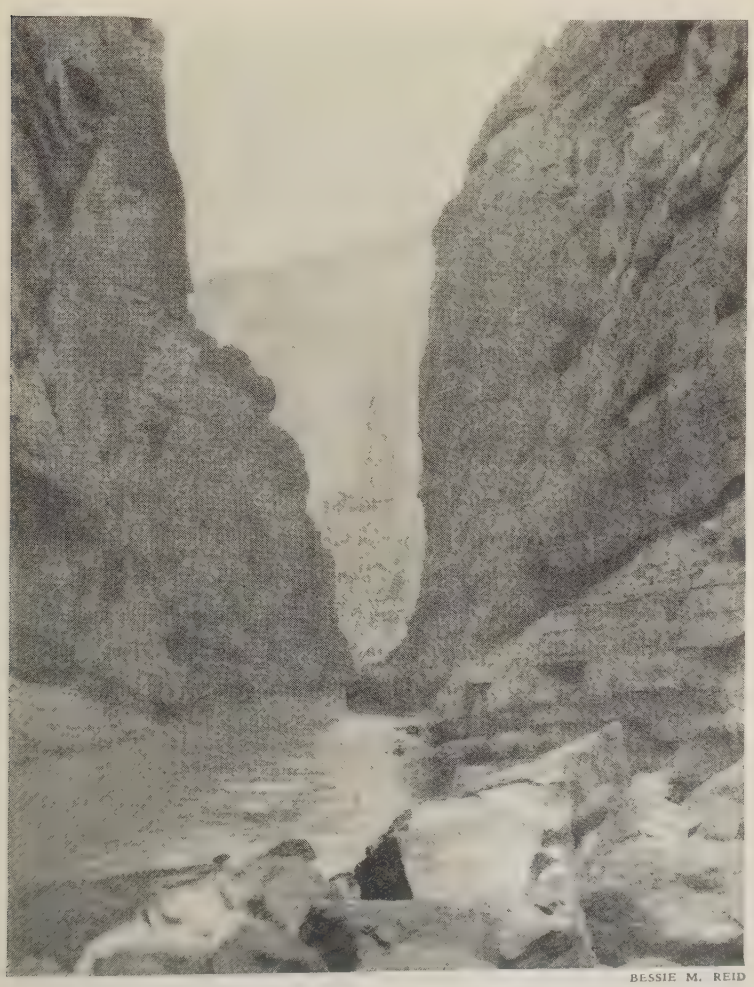
Derrick-laden oil fields dot the entire expanse of the huge commonwealth. Indeed, the state is so broad and diverse that the old saying, "Nothing was ever told about Texas that is not true of some part of it," is justified. Other old proverbs still hold true in some parts—such as "Texas has more rivers and less water, more cows and less milk, more land and less soil, more men and fewer women than any other state in the Union," and the legend that "Texas is a land where you have to climb for water and dig for wood." The last is borne out by the fact that the water is up canyons instead of down and the root system of the scrub flora of the extreme West is more extensive than the growth above soil. It used to be said that Texas was "bound together by rawhide," but one seriously considering the state as an integer will want more of an explanation of its homogeneity than that statement, cryptic to the outlander.

RAY V. DAVIS

ALONG THE FAMOUS PALO DURO CANYON

Almost as colorful as the Grand Canyon of the Colorado, this great gash in Texas soil is the pride of the Panhandle in which it lies

During the early twenties of the last century the first Anglo-American colonists located in the eastern part of the state, where they found a rich soil and a rainfall, at times almost tropical, that was certainly sufficient for any kind of farming. They at once began raising cotton, sugar cane, and corn. At the same time they found an empire of land adapted to grazing. The Spaniards had already introduced horses and cattle, so that in many regions wild horses, mustangs, and unclaimed "maverick" cattle ran in droves. Thus side by side ranching and the plantation business grew up. The plantation was essentially of the Old South; the grazing industry was primarily borrowed from Spanish rancheros. The two in a way blended, but in time the stock raisers pushed west beyond all plantations. Each industry adapted itself to peculiar conditions, and thus arose a life that was neither purely Southern nor distinctly Western. Hence it has become increasingly difficult to rank Texas either as a Southern state or a Western state, and emphatically it is not "Middle West."



BESSIE M. REID

WHERE THE RIO GRANDE DIGS DEEP

The St. Helena Canyon, two thousand feet from top to river. The most distant wall is in Mexico

To discover the character that differentiates Texas from other sections a visitor must feel Texas northers, see bluebonnets in the spring and smell greasewood after a rain, gaze at stars that look as near and bright from a flat Texas prairie as if seen from the summit of Mount Whitney, and observe a thousand other natural phenomena. But primarily he must consider history. He will have to learn that Texas won its freedom from Mexico in an independent war, was for a decade a republic to itself, and that though it has been a state for approximately eighty-five years, its citizens still have a certain feeling of apartness engendered during its youthful days of independence. When Texas entered the

THOUSANDS OF HEAD OF CATTLE STILL GRAZE HERE

A West Texas landscape, with its cedar and oak covered hills, and with its barbed wire which replaced the open range

Union it reserved the right to control its own public lands; as a result, it is the only state in the Union in which the federal government has not directed the distribution of the public domain among settlers—and speculators.

The land—where has it gone? Vast areas were patented to homesteaders. Other vast areas have been sold, mostly for grazing, to the highest bidders. Millions of acres were granted as subsidy to railroads; millions were issued in scrip. Another vast portion, much of it not reckoned as tillable, was set aside for the University of Texas and the common schools. The finding of oil on some of the grazing land owned by the University of Texas has made that institution wealthy. And now the public domain, except for scattered sections, has all been distributed. Texans of cultivated minds are lamenting with increasing regret that none of the beautiful "hill country," none of the deep forest land, none of the coastal marshes, none of the wild Big Bend country, none of the cool Davis Mountains, none of the deep and mighty gorges of the Plains—not one acre of the multiplied millions was set aside for parks and public enjoyment as so much federal land has been set aside. The proverbially "wise forefathers" of Texas did not reserve even enough land to maintain a herd of the all but extinct Texas longhorns.

J. M. HEISER, JR.

TEXAS IS VERSATILE

Contrast the arid view above with the semi-tropical scene presented by this East Texas lake with its surrounding foliage

In its Spanish inheritance—symbolized by mission ruins and Spanish land titles and laws—California more nearly resembles Texas than any other state; but California was settled in such a rush, under national direction (where there was any direction at all), that the Spanish tradition was largely overwhelmed. In California, for instance, the pastoral industry of the Spaniards was forgotten in the rush for gold, whereas in Texas it was stimulated by the same cause. Thousands of cattle were trailed across the continent from Texan breeding grounds to feed the gold-fevered Californians. Almost half of the people in San Antonio and El Paso, the third and fifth cities of Texas in population, (Continued on page 393)

WHERE THE FLOWER LEGIONS PARADE

FROM SPRING TO SPRING, THEY ARE ON THE MARCH IN TEXAS

BY B. C. THARP

N. E. RUTT

PRICKLY POPPIES IN CHAPARRAL COUNTRY
Though normally white, elsewhere, here they become yellow and rose as well

RECOGNIZING no artificial boundaries, plants distribute themselves according to their several abilities to adapt themselves to the conditions provided by soil and climate. For this reason there is little vegetation that can be said to be peculiarly or distinctively characteristic of Texas. The vegetation of the southwestern Texas border is quite clearly a part of that occurring in northeastern Mexico; the floral landscape of trans-Pecos Texas is just as clearly an eastern extension of that of semi-desert Mexico, Arizona and New Mexico. Likewise, the Panhandle High Plains have connection through eastern Colorado northward to Canada; the East Texas pine forest is a western extension of a type which stretches eastward to the Atlantic; the oak-hickory forest is a southern extension through Arkansas and northern Louisiana from Kentucky and southern Ohio. The true prairie, stretching from the Red River to the Gulf across the eastern central portion of the state, together with that unique mixture of oak, cedar and grassland which covers the Edwards Plateau, constitutes a transition from humid to semi-arid climate. The two contain by far the greater portion of those species which are restricted in distribution to Texas, and hence constitute the only plant communities that might be considered characteristic of the state.

BULL NETTLE
Its sharp spines protect flowers of beauty and fragrance

JACK I. PULLEN

A PLANT OF THE BAYOUS AND STREAMS
The St. John's lily loves the lowlands around the Gulf of Mexico, and is quite common in Texas

Each of the areas suggested, in addition to the one or two most prominent, permanent and predominant species, contains many others of secondary importance, or less. These include the wild flowers. Some of them, because they are very choice and exacting in the matter of living quarters, are very much restricted in distribution; others are so adaptable as to feel at home almost anywhere.

The southern Texas border area, from San An-

JACK I. PULLEN

SPANISH DAGGER IN FULL BLOOM

This flower is one of the best beloved of myriad Texas blooms

tonio to Del Rio, Brownsville and Corpus Christi, is Texas' famous "chaparral" country. Dense, scrubby vegetation of wide range as to relationship but characteristically well equipped with thorns covering rolling hills, is the rule; valley grassland with open park-like growth of mesquite or live oak the exception. Acacias predominate. Early spring is the season of surpassing attractiveness. Huisache, awakening from its short winter nap, hides its graceful but thorny branches beneath an entrancingly perfumed gown of golden fleece; huajillo, *Pithecolobium*, cat-claw and black brush don their dainty frocks of creamy hue and softness; mimosas theirs of yellow and rose; birds, led by a chorus of thousands of mocking birds and cardinals, bubble forth their spring love songs as, in glad anticipation of renewed domestic duties, they set about home building; bees, ever industrious, ever practical, swarm from a thousand hives and set busily about to reap and store their annual harvest of pollen and nectar; truly splendor marks the arrival of spring in the chaparral.

Somewhat later comes the bloom of mesquite, retama, *Guiacum*, Texas ebony, and other members of the group. One of the most outstanding of these is *Leucophyllum*, or white leaf. Thornless in a thorny company, its small, softly-ashen leaves suggest both its scientific name and that of *ceniza*, meaning ashes, by which it is known to Mexicans. Following rains this shrubby foxglove puts on a wealth of exquisite rose-colored bloom, landscaping the hills with rare, charmingly effective individuality.

THEY EXIST IN ALL COLORS

From yellow to deep purple, the thistles adorn all sections of the Lone Star State

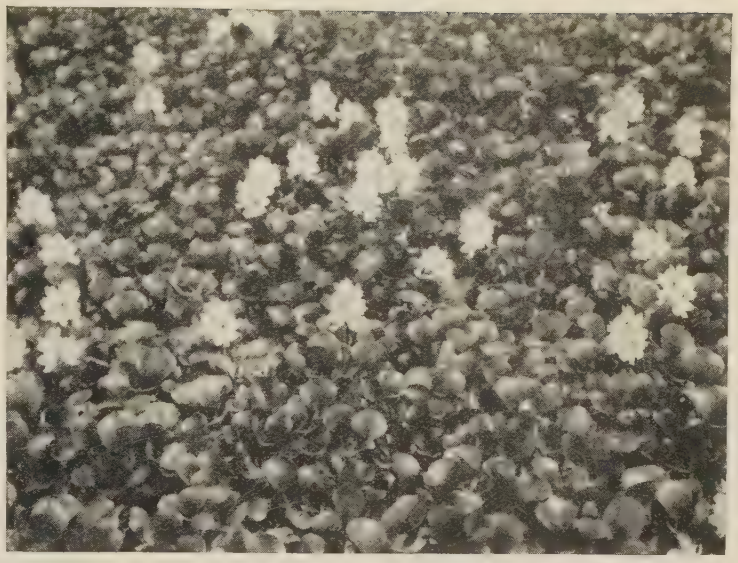
JACK I. PULLEN

THE BLOSSOMS OF THE DEWBERRY

Later these white petals are replaced by juicy fruit of excellent flavor, much favored by Texans

Clustered beneath the dominants, protected alike from browsing animals and from the full intensity of excessive light and heat, the more delicate cactuses and other timid and retiring plants take refuge. Characteristic semi-desert members of the four o'clock, mallow, verbena, milkweed, pokeberry, poppy, mustard, lily, yucca, aster, pineapple, evening primrose, snapdragon and other families are to be found thus, the more venturesome taking their chances in the more open places. Two cactuses are even notable as members of the dominant group: one, Lindheimer's prickly pear, with its oval flattened stem segments, piled end on end, displaying around their edges

circles of large showy orange or red flowers followed by green or magenta pear-shaped fruits; the other the slender tasajilla, *Opuntia leptocaulis,* or pencil cactus, whose delicate stems prevent the uninitiated from recognizing it as one of the most vicious of all. Its flowers are inconspicuous, small, pale greenish-yellow. Both these form dense impenetrable thickets in locally favorable places. Other species of vastly different form—nipple cactus, devil's-heads, mescal buttons, living rocks—half bury their spherical, flattened or cylindrical bodies beneath the surface of the soil, where they are scarcely noticeable except when they burst into a brief season of showy bloom. Prickly poppies in white, red and yellow splendor fill open places in all favorable localities.



THE BOATMEN HATE THIS PLANT
Bright glossy green, the surpassingly beautiful water hyacinth chokes canals and bayous

A FLOWER OF PLATEAU AND PRAIRIE
The large blue-eyed grass has blossoms nearly two inches across

As in all climates where moisture is insufficient, a blossom period in the chaparral follows every rain; no such period, however, approaches in splendor that of early spring.

Trans-Pecos vegetation is generally characterized as the Sotol region of Texas, from the dominance of sotol, a close relative of yucca having a short stalk topped by a dense rosette of long slender flexuous leaves whose edges are armed with sharp, tough, stout, recurved teeth. Apparently from the center of the rosette comes the flowering stalk, a tall, slender, seemingly leafless structure, the topmost four or five feet of which is densely clothed with compact clusters of small flowers, individually quite inconspicuous. Associated with it is one of the century plants, *Agave lechuguilla,* having short, stocky, stiff leaves clustered at the ground surface, each tipped with a dangerous dagger-like point of spiny sharpness. Both plants cover vast stretches of rock foothills. Retaining their dead, woody, flowering stalks for months, or even for years, they are conspicuous and striking in appearance at all times. Interspersed with them in the eastern portion of the region, or occupying commonly more level terrain, is an abundance of *Leucophyllum.*

Along streams in the better watered valleys where soil is more fertile, local areas of cat-claw and other acacias and mimosas, together with mesquite and white brush, occur; while the broad, open valleys are oftentimes almost pure stands of grama grass with a scattering of mesquite or, on the gentler slopes, of stalked yucca. In canyons and along boulder covered, usually dry streamways, redbud and Mexican buckeye abound in bloom in early spring.

Creosote bush, appropriately named, both from

A SINGLE PLANT OF THE MORNING GLORY
This is the narrow-leaved bush variety, found in the sand hills of the upper Red River. Each locality has its own type

the odor and color of its foliage, covers vast stretches of semi-level alkaline, gravelly outwash, both in mountain valleys and in the less elevated intermesa region eastward slightly beyond the Pecos. In early spring and subsequently following rains, this characteristic, waist-high, thornless shrub is covered with yellow bloom. Associated with it in almost equal abundance is another shrub of almost identical habit, but of distant relationship—*Flourensia*—a composite with showy, orange-colored flowers. Burro grass and the diminutive holly-leaved *Perezia,* with its comparatively large lavender flower topping a short slender stalk, are almost the only plants occurring in the interspaces. Even they are commonly so sparse as to enhance rather than relieve the general impression of bareness.

Mountains, fragments of the Rocky Mountain system, are scattered over the western portion of the area. Rising to an altitude of nearly ten thousand feet, they support forests of sizeable pine and juniper near their summits, open mountain live oak and grama grassland on their sides. Mountain species, *Echeveria,* saxifrage, mock-orange, *Fallugia, Spirea, Mimosa,* tree arbutus, standing trumpet flower, four o'clocks, cardinal flower, milkwort, lupines, astragalus and many composites in gorgeous blues and yellows, abound. Lower down, toward the bases, on rounded tongues of gravel outwash, ocotillo stretches its long finger-like stems grotesquely against the skyline. Seemingly beckoning in mute loneliness, it arrests attention, makes unique and powerful appeal. Even when, on seasonal occasion, the upper third of each wand is covered with a blaze of scarlet as it bursts into a brief period of bloom, the impression of utter loneliness still prevails. Beyond question it is one of the most attractive of all desert plants.

Much of the high or staked plains area is now so largely cultivated or so intensively grazed as to give the impression of wild flower scarcity. Here and there, however, especially in the more sandy southern portion, stretches occur which still show, to some extent, what the region originally looked like. Showy borages, yellow and white; Berlandier's daisy; *Astragalus,* including the famous loco weed; rose heath aster; firewheel; skullcap; red wild honeysuckle, *Gaura coccinea*; sky-blue day flower; western spiderwort; white milkwort; large false dandelion; day primrose; prairie *Zinnia*; milk pink; sickle-fruited *Hoffmannseggia*; white and yellow daisies; blue and yellow asters, including the beautiful *Baileya*; grotesque spectacle-pod; dark red winecup; red-flowered sandbur; umbrellawort; rayless *Thelesperma*; dwarf morning glory; white and orange flowered mentzelias; small white beard-tongue; these and many another gratefully fill every protected nook and cranny with their beauty and fragrance. Growing with them along canyon sides and breaks are mimosas, acacias, wild plum, *Fallugia,* giant Missouri evening primrose, Indian bread root, prairie clovers in red and white, daisies in whites and yellows.

The Edwards Plateau is a southward extension of the great plains, composed largely of cretaceous limestone and becoming increasingly rugged toward the escarpment which marks its southern boundary. Its ravines and hillsides, except where grazing of sheep and goats is too intensive, are covered with the richest bloom. Green dragon, a jack-in-the-pulpit relative, masses itself at the foot of a favorite north-facing cliff; shooting star, common in certain other parts of the United States, is found in Texas only sparsely along seep lines on the plateau's ledges; wild hyacinth, crow poison, wild onion and other lilies cover hillsides with blue, white and pink profusion; white and yellow rain lilies, the principal amaryllids of the state, spring up by the million, apparently over night, whenever rain breaks a drought; blue-eyed grass and its large showy cousin, *Nemastylis acuta,* are the iris representatives; *Yucca* and *Nolina* dot open hillsides or cling to crevices in cliff or ledge.

Orchids are not common, but rattle-snake plantain and the greenless coral-root grows along stream banks, the latter in deep shade; dainty ladies tresses are found in open places; *Persicaria* in great variety and profusion adorns wet floodplains, while its cousin, *Eriogonum,* goes to the other extreme, inhabiting dry, bare rocks; columbine, pride of Colorado, is to be found in Texas only in the protection of the deep moist shade of overhanging plateau ledges and in the mountains; mock-orange, acacias, mimosas, Texas mountain laurel—no laurel at all, but a bean—Mexican buckeye and persimmon, the beautiful madroña or tree arbutus, *Styrax,* and other flowering shrubs grow along ravine sides, some abundant, others rare; mustards, white, purple and yellow exhibit endless variety; mountain daises, four o'clocks, mountain pinks, lupines including the bluebonnet, blue gilias and lemon mints fill every field, meadow, crag and crevice with bloom.

Some hundred and fifty miles wide just south of Red River, cleft in the middle as far south as Waco by a narrow strip of oak-hickory "cross-timbers"—the prairie gradually narrows southward to the vicinity of the coast, along which it suddenly expands to occupy a strip some fifty miles wide from Louisiana to Corpus Christi. Restricted to black "gumbo" soil, it covers a considerable portion of the climatic transition from humid to arid. Together with the Edwards Plateau, which completes the transition, it contains a vast majority of the numerous plant species limited in distribution to Texas. The impress made by these constitutes the basis in fact for the widespread idea that there is a peculiarly "Texas" vegetation. Texas sage, floury sage, white milkwort, narrow-leaved princess spurge, white-flowered *Silphium,* large blue-flowered *Pentstemon* and others mark the drier western portion of the prairie; Pitcher's salvia, broad-leaved spurge, tall, yellow-flowered *Silphium, Erythronium,* white-flowered *Pentstemon* typify the moister northeastern portion.

First bloomers in the prairie, as in the oak-hickory forest and the plateau, are dainty midget mustards, yellow and white, and, in damper places, diminutive chickweeds. These peep shyly out from winter's carpets of rosettes. Early blooming astragalus, (Continued on page 389)

HARRY FOEHNER

No tourist can fail to delight in the palm-guarded boulevards that mark the Lower Rio Grande Valley

JACK I. PULLEN

An angry Texas bat, who dislikes his slumber disturbed, prepares to do battle with the photographer

JACK I. PULLEN

A young Texas screech owl surveys the world with questioning eyes

Guadalupe Peak, 9000 feet high and the most lofty point in Texas, is the home of Texas bighorn sheep

GALVESTON CHAMBER OF COMMERCE

BUREAU OF BIOLOGICAL SURVEY

One of the mighty Texas fishing fleet which puts out from Galveston, Gloucester of the Southwest, to reap a rich harvest

W. L. AND IRENE FINLEY

TYPICAL OF THE TEXAS PLAINS

The clever road-runner, who is not holding his own in the Lone-Star State, and needs protection

TEXAS FEATHERS

MANY KINDS FLOCK TOGETHER IN THE BIGGEST STATE

BY BESSIE M. REID

The author of this article is well known in Texas ornithology and is a member of the Outdoor Nature Club of Houston, one of the livest groups of Nature lovers and real conservationists in this country

TEXAS has representatives of about half of all the species of birds in the United States, boasting of more varieties than belong to any other state. Underlying as it does one of the great uncharted routes followed twice yearly by tens of thousands of feathered voyagers, Texas is richly blessed with an avian host. Bird lovers of the Gulf Coast are rarely privileged because along this shore line nearly every conceivable size, shape, color and classification of North American bird migrants pause for their last home-caught meal. From there they "hop off" for the Tropics.

When the irresistible call of migration sounds again back they come to the same beaches and stream-mouth trees, there to rest and breakfast on their northward trek. Some of the leave-takers and home-comers are partly Texas' own, and long is the list of the birds that breed only within its borders. From the wonderland of Mexico come feathered gifts for Texas alone, among the most striking of which are the hummingbirds. Nine species—just one rare species less than Arizona—of these gorgeous bits of living color are found in the state. Two species, Reiffer's and the buff-bellied hummingbirds, do not extend north of southern Texas.

Similarly limited in the state are the ranges of the Mexican or least grebe, the masked and the black-bellied tree ducks, the Rio Grande turkey, the chest-

JACK I. PULLEN

JUST A HAPPY NESTFUL OF SPOONBILLS

Vingt'un Island, in Chambers County, is one of the largest breeding grounds for roseate spoonbills in North America

nut-bellied scaled quail, the chachalaca, the red-billed pigeon, the white-fronted dove, the Texas barred and screech owls, the great rufous-bellied and Texas kingfishers, the golden-fronted woodpecker, the Derby, great-crested and Mexican crested flycatchers, Couch's kingbird, the Texas horned lark, the blue-eared, Texas and green jays, the red-eyed cowbird, the Vera Cruz red-winged blackbird, the great-tailed grackle, "jackdaw" or "bush-popper", the Texas seaside sparrows, the Texas pyrrhuloxia, Sharpe's seed-eater, the yellow-green and small white-eyed vireos, Sennett's, the golden-cheeked and the Rio Grande yellow-throat warblers, Sennett's thrasher, the black-crested titmouse, Lloyd's bush-tit, and Merrill's parauque.

W. L. AND IRENE FINLEY

BROWN PELICANS ON THE TEXAS COAST

These stately birds breed by the thousands all along the Gulf, making brilliant the shore lines

Chance additions to her legitimate roster are made from all points of the compass. Not many years ago a snowy owl was killed in Tyler County. In 1929 an Audubon's shearwater was captured in the Sabine Lake district. In 1928 a blue-faced booby was caught, examined and freed near the same place. The yellow-billed tropic bird is not unknown, when anxious seafowl hasten westward out of a storm's pathway. About twenty years ago three flamingoes sailed majestically over a lake, presumably after having been blown from their course by gales. Late in the past year a hunter shot, and proudly lugged to a taxidermist what he had supposed to be a fine example of the uncommon greater snow goose. An alert game warden, however, expensively broke the news to its owner that the trophy was a "swan." Because of the obscurity of its markings the identification of the variety was not definitely made until Washington declared it a "Whistling." Long, long ago, the whistling swan was an ordinary Texas winter visitor.

W. L. AND IRENE FINLEY

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A PAIR OF HANDSOME SHORE BIRDS

The black skimmer (left) and the black oyster catcher pose on the sands where they nest

The trumpeter swan decorated Texas' cold weather marsh waters, and cranes stalked the year round over pine-clad low hills along the East Texas rivers and bayous. In March of the current year it was a red-letter event to note five north-bound sand-hill cranes settling for a brief stay in a former home port of their kind in Hardin County. A Mexican crossbill died, seemingly of exhaustion, soon after being picked up in Galveston City. Bohemian waxwings spent the worst of last December in San Antonio. Once a jabiru, tropical America's edition of the true stork, made its way as far into the state as Austin.

About the time white pelicans become a wonted sight to beach bathers, there may appear a visitant who mostly keeps himself quarantined on the outer reefs and mud-banks of Louisiana-Texas waters. His advent is held sinister by both his fellow birds and mankind. Shoals of tiny, fleecy clouds always scud rapidly across the sky above him; and from the southeast there will be coming little puffs of wind that sigh gustily, die down, and quickly spring up again with ever increased strength. The gulls are apt first to spy this man-o'-war or frigate bird, and set up a partly angry, partly frightened screaming. For they know that as long as he stays in their midst he will levy unmercifully upon their choicest fish-takings. Experienced old bay fishers and trappers are little less

W. L. AND IRENE FINLEY

IT DOES NOT WANDER FAR FROM THE STATE

The pyrrhuloxia or gray cardinal is one of a long list of birds that enters the United States almost exclusively in Texas

BESSIE M. REID

THE AUTHOR AND HER SNOWY HERON

"Jackie," friendly and tamed, refuses to pose without his mistress

JACK I. PULLEN

THE CRESTED FLYCATCHER

As common as the humming bird below, one of nine Texas species

FINLEY-PACK

exorcised. To them the pirate, with his long slender body, deeply-forked tail, and narrow dark-spreading wings, is a messenger who forewarns that ancient Mexico's great god "Hurikan" is riding on unleashed winds and waves.

Back in the good old days of superlative wastefulness, the "nigger guinea", "lordgod", "lordgolly" or "gollybird", otherwise the ivory-billed woodpecker, sold well in the meat markets, along with similar "game." He was besides called upon to help out larders in his home areas. His ranks had therefore almost reached the vanishing point before he grew educated to the potential meaning of a gun's sound—even the sight of one. Then he withdrew into the wildest and least accessible depths of the thickly wooded swamps. Recent timber cutting, in parts of these, has proved him not yet extinct in Texas. Without rigid protection he soon will be. Cunning as he is shy, he always keeps a tree trunk, or thick branch, between himself and an intruder. From behind this he peers suspiciously, careful that little more than one eye is exposed. But his size and his markings are against him. He is bigger than the pileated variety he resembles—as big, in fact, as a crow—and his sharply defined black and white patches would make him conspicuous without the aid of his topknot's high scarlet flare. He also undoes the results of his caution in other directions by shrieking as he flies, or by noisily knocking down nuts from his tree as he takes off.

Reports have been coming in, for some time, of parrots' feeding among the orange groves on the Texas side of the Rio Grande. Recent finding of their possibly moulted feathers, in the linings of verdins' nests, may be of material assistance in sooner or later adding this bird to recognized Texas avifauna.

An unwelcome transient guest of the last few years is the starling; to hear at any time that he has become a resident would not be a surprise.

Padre Island, one of the state's coastal barriers, stretches its attentuated length past the water fronts of five Texas counties, none of them small ones. Mustang Island, lying off Corpus Christi Bay, St. Joseph's Island off Aransas Bay, Matagorda Island beyond the bay of the same name, and Galveston Island, site of an important seaport, are all large "bodies of land entirely surrounded by water." Scattered through the bays, channels and passes between the big islands, are innumerable islets. Some are mere bars and dots of sand, shell and mud, or varying combinations of these. All are age-old haunts of gulls, terns, skimmers, brown pelicans and the like.

Green Island, in Laguna Madre, has its feathered population under the watchful care of the Audubon

W. L. AND IRENE FINLEY

A GENTLEMAN OF THE SEASIDE

A young black buzzard, very dignified with his downy plumage

BESSIE M. REID

A MOST UNUSUAL MEETING

A summer tanager and the scarlet variety are caught together by the camera

Societies. Prominent Matagorda Bay guests of little Farwell's Island are a number of reddish egrets. "Bird" islands, significantly named, occur in most of the shore line counties of Texas. The particular "Bird Island" in San Luis Pass, at the southwestern extremity of Galveston Island, teems with species that swim and dive for a living.

A group of shell reefs, the largest of which is Vingt'un Island in Chambers County, may turn out to be the most extensive breeding ground of the roseate spoonbills on the North American mainland. On June 8, 1930, members of the Houston Outdoor Nature Club counted a hundred and four adults, ninety-seven young and four spoiled eggs belonging to this rare species. Nor did this quite cover the ten-acre extent of the islet. There were places impossible to investigate without destroying heron babies and eggs, precariously balanced on their rough nesting platforms in bushes or atop the felting of water-rooted coarse weeds and grasses. Gray-blue, reddish, glistening white and deeply pink were the lines and spots in evidence at the water's edge or among the matted vegetation of more distant reefs.

Though the Lone Star State has no monopoly of them, there are three birds that seem peculiarly typical of Texas.

One is he who bears many descriptive names, roadrunner, among them. Texans most often speak of him as the *paisano*. The writer O. Henry immortalized the great striped bird's cleverness and beneficent industry. He spends all his time, when not of necessity otherwise engaged, in accumulating his favorite articles of diet. These include pestiferous caterpillars, and worms too huge for any other bird's tackling, immense beetles, tarantulas, centipedes, vinegarroons, toads, lizards and snakes.

I have twice seen a roadrunner kill and chop up a rattlesnake, with its powerful bill. But for all his summary dealing with terrors to humankind, the roadrunner is doomed, except far from traces of civilization. He is too adept at locating where a hen has "stolen" her nest, and making the most of the treasure trove. Nor is he above nipping off with a small chick or duckling, when he has infants of his own to look out for. Besides incurring punitive measures on these scores, he often devours part of the bait set out for poisoning wolves and rodents. Cars, on the highways now traversing every section of Texas, kill many of his brothers.

The scissor-tailed flycatcher, or "Texas Bird of Paradise", prefers the mesquite tree above all other nesting places. But his range limits extend far beyond those of the lacy-leaved adventurer that travels as far west as a trace of moisture can be found by its deep-delving roots. Live oak and post oak, the hackberry, or a fine specimen of huisache, are next acceptable. On branch tips of any of them,

(Cont. on page 386)

JACK I. PULLEN

A HANDSOME TEXAN

A young tufted titmouse rests on a stump

W. L. AND IRENE FINLEY

JUST PALM-SINGING

The mockingbird warbles from a palm tree

W. L. AND IRENE FINLEY

BEAUTIFUL DENIZENS OF TEXAS

The reddish egrets spread their wings in graceful flight near the Gulf of Mexico

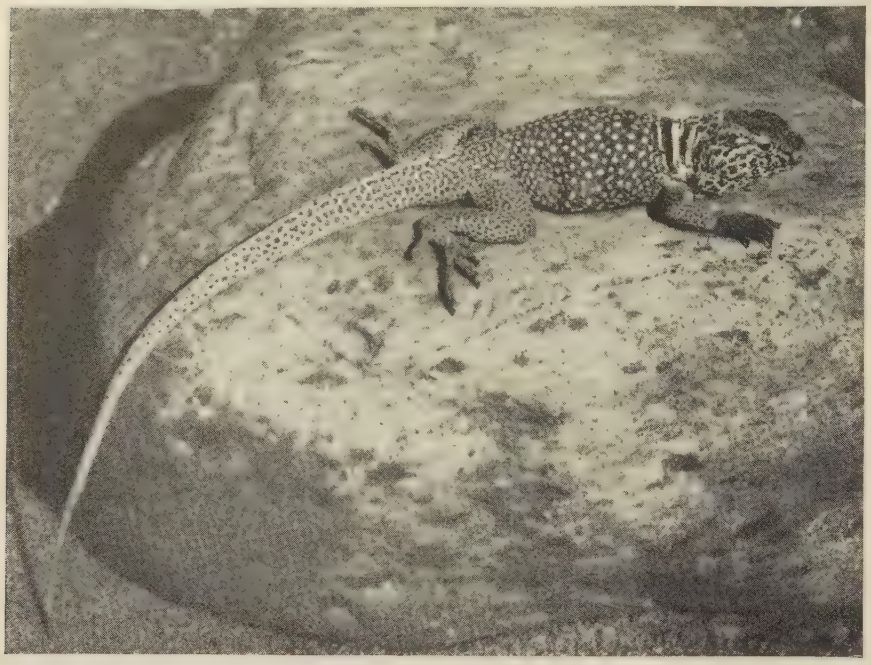
SAURIANS OF THE SOUTHWEST

THE DESERT BOASTS OF QUEER SPECIES

BY

CHARLES M. BOGERT

PHOTOGRAPHS BY THE AUTHOR



THE WESTERN COLLARED LIZARD

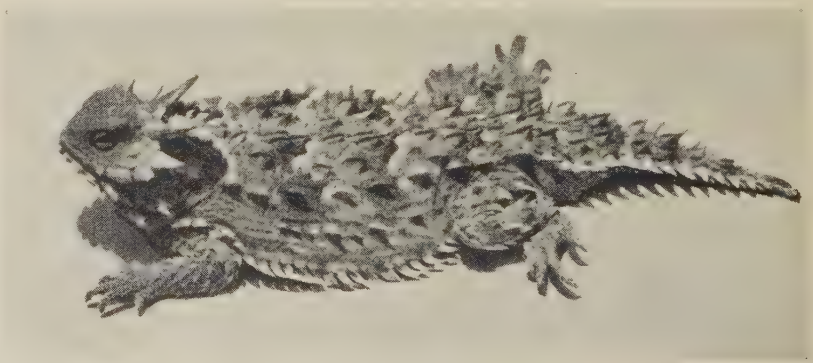
Most beautiful of his kind, he selects a vantage place on rock or driftwood to see and be seen

This article does not restrict itself to life found in Texas, but is presented in this issue because it excellently describes the saurians of the entire region in which the Lone Star State is situated

THE SOUTHWEST is the location of many wonders and curiosities. The geological formations, the prehistoric ruins, the climate, the wild life—all of these well merit the attention given them. Yet one most interesting phase of the wild life—the reptiles—has been greatly neglected. Many to be found in the Southwest are unique among those of the world. With lizards that run erect on their hind legs, footless snake-like creatures, weird horned fellows and even stranger varieties, this section assuredly possesses its share of the remarkable.

Lizards seem to be the creatures upon whom Nature has most generously bestowed her colors. Even on the desert where the life tends to develop a pallid or gray coloration, the lizards are the possessors of iridescent blues, greens, and yellows. What beautiful creatures many of them prove to be upon close examination!

The western collared lizard is perhaps the most beautiful of his kind to be found in America and certainly a most striking and interesting saurian aside from coloration. An observing person passing through almost any



THE PRIZE UGLY FELLOW OF THE SOUTHWEST

A Blainville horned lizard, which makes an excellent pet. Below is that gentleman of the rocky places, the dusky scaly lizard

THE INDIANS AND MINERS USED HIM FOR FOOD

A young chuckwalla, whose youth is distinguished by broad bands on back and tail. He is the second largest of the desert lizards

rocky desert gulch in the Southwest is certain to see this fellow, for the male has the habit of stationing himself upon the highest rock or bit of driftwood in his section of the wash, where he can see his enemies and food—and likewise be seen. A location near a stream is preferred, possibly because water acts as an attraction for insects, his principal diet. He is not entirely insectivorous, however, for he also eats the tender buds of desert flowers, and sometimes turns cannibalistic. Lizards of smaller species form a part of his menu and sometimes the young of his own kind are eaten. As he is one of our larger lizards, often attaining a length of thirteen inches, and also possessing an enormous mouth, it is a simple matter for him to devour creatures nearly half his bulk. The female is usually smaller in build and not as brightly colored. The ever-present black and white collar makes this species an easy one to identify.

But strangest of all—watch this animal run. The first few strides are taken on all fours; then suddenly as the animal attains a greater speed the fore limbs rise from the ground and he continues rapidly on his way kangaroo fashion, using only the powerful hind legs for locomotion. In this attitude his appearance must greatly resemble some of the great prehistoric dinosaurs. This method of running is a peculiar adaptation indulged in by few lizards and most noticeable in this species.

A FENCE LIZARD TRAGEDY

The female collared has a meal. Below a desert iguana shows off his regenerated tail, which he forgot to cover up

His near relative, the leopard lizard, likewise uses his hind legs for rapid locomotion, but instead of being confined to rocky gulches, he inhabits also the open deserts and dry mountain slopes. When cautiously approached, this denizen of the dry lands usually runs a short distance and halts, observing his pursuer curiously from behind a small hillock of sand with his head just visible over the top. When the onlooker comes too near, he again dashes off on his rear legs to another

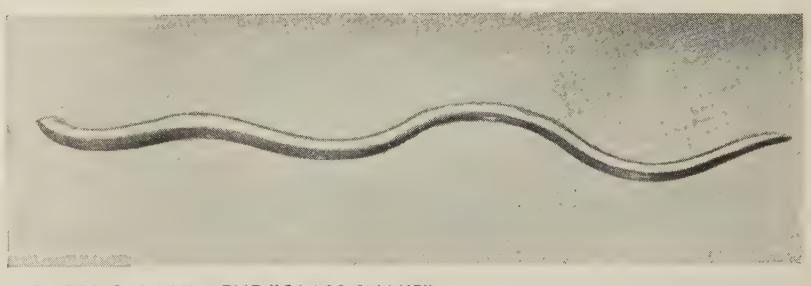
hillock or more frequently into a nearby bush. When cornered he will generally stand his ground, assuming a fighting attitude with his jaws widely spread, and display a deep black throat. Essentially a ground reptile, his gray and brown spotted coloration from whence his name is derived doubtless affords valuable protection. During the nuptial season he assumes added coloration in the way of bright red marks between the spots, producing a strongly barred effect. The mating season colors appear to last only a few weeks, after which time they begin to fade.

This large carnivorous species feeds mostly upon horned lizards, which are torn to pieces with his powerful jaws. In a wild state the animals are often seen with the dried blood of a recent victim still upon their jaws. In the deserts of Nevada where the leopard lizard is relatively common it is said to have been an important food of the Indians.

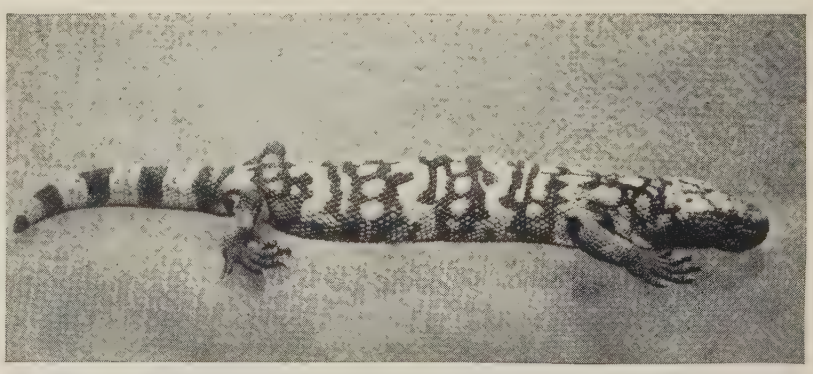
In the tree yucca belt on the desert as well as in rocky situations, a characteristic reptile is the desert scaly lizard. During the spring when the joshua tree is in bloom, this inhabitant benefits from the insects attracted to the huge cream-colored flowers of this yucca. He is invariably seen waiting alongside the flower stalk with statue-like stillness for some insect to come close enough for capture. A closely allied species, the dusky scaly lizard, is not confined to the desert. In the distance the desert scaly lizard appears to be uniformly gray, but when examined closely, a variety of colors stands out. On the sides are three or four rows of yellow scales interspaced with rows of gray that is darker than on the back. The under side is marked with a large patch of iridescent sub-metallic blue with a third and smaller patch of the same color on the throat. A triangular patch of black on either shoulder gives a collared effect. On the back and sides the large scales are strongly keeled, lending the creature the decidedly rough appearance that gives it the name. The walk as well as the general demeanor of the scaly lizard suggests an air of complete independence well becoming to a desert animal. When insects are not plentiful plant seeds are eaten. A specimen liberated in the yard appeared content to remain, feeding on a mixed diet of insects and seeds from the asparagus "fern."

It was interesting to watch two male scaly lizards fighting. Arching their backs and extending the iridescent pouch of the throat, they would approach each other sidewise in a crab-like manner. A few nips would be exchanged and one would finally retire, leaving the victor to pause a moment in an amazed manner, only to dash after the fleeing contender to repeat the entire performance. Really quite a harmless if not playful combat!

In the early spring lizards may be observed during the entire day. As the days become warmer, and they are unable to endure the hot sun of midday, they do their feeding mostly in the early morning. Contrary to prevalent opinion, reptiles do not require sunlight the entire day. While a reasonable amount of sun is necessary, most reptiles if placed in a cage in the direct sun where they cannot seek shade will, on a warm day, die in an hour or so of the heat. Many snakes and a few lizards are nocturnal. The diminutive desert night lizard is rarely, if ever, seen in daylight unless routed from his concealment. It was due to his preference for the dead tree yuccas as a place under which to hide that this species of night lizard was for years thought to be rare. Joshua trees and their wind-broken branches which lie decaying upon the ground afford a home to countless small insects, especially termites. These insects, along with their eggs and larvae, constitute the food of their reptilian neighbor. A captive specimen thrived, fed entirely on small moths.



FARMERS CALL HIM THE "GLASS SNAKE"
He is the silvery footless lizard, however, and no snake at all. His regenerative tail has given him his nickname



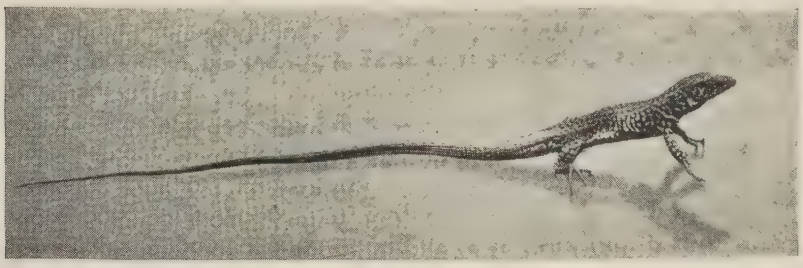
THE ONLY POISONOUS SOUTHWEST SAURIAN
The Gila monster, who looks as bad as he is, but only half as bad as he's been painted. Not to be fooled with

A somewhat unique characteristic of the species is the absence of eyelids. Like the eye of the majority of the nocturnal animals, the orbs of this variety are large and cat-like, with vertical pupils. A change in color of the skin from dark gray to a flesh color is frequently noted when light or heat affect them. He is common in practically every locality in which the weird tree yuccas are present despite the fact that he seems to be the principal food of numerous small snakes. The enemies of nocturnal reptiles in general must be fewer than those of the species feeding in the daytime.

Second in size only to the Gila monster is the chuck-

walla. A picturesque inhabitant of rocky places in many parts of the deserts, this lizard was often mentioned in literature. His large size, together with ease of capture, rendered this unfortunate saurian a common food for some tribes of Indians, who are said to have used a cruel method of securing chuckwallas. Because of their many other enemies, chuckwallas are exceedingly wary. The instant an approacher is observed, the animal disappears in a crack in the rocks. If molested or prodded in this sanctuary, a further attempt is made to improve his safety by inflating his lungs to capacity, which naturally causes his sides to expand and closely fit his chosen crevice.

Miners and prospectors also ate the chuckwalla. More than one "oldtimer" was known as "Chuckwalla Charley" or "Chuckwalla Pete," owing to a propensity for this particular food. Their meat is doubtless highly palatable and is said to be comparable in taste with frog-legs.



AND THEREBY HANGS A TAIL . . . .
The whip-tailed species carries three times his body length in caudal appendage—what for, no one knows

HE KNOWS A TRICK OR TWO
The gridiron-tailed lizard always waves goodby with his beautiful tail before seeking refuge in hole or bush

The chuckwalla is entirely herbivorous and feeds on the leaves and buds of desert shrubs. He even eats the yellow flowers of the creosote bush. In captivity a decided preference is shown for yellow flowers, especially for wild mustard and dandelions. This preference may be partly due to the fact that the greater number of desert plants have yellow blooms and the chuckwalla is accustomed to choose his food by color as well as by taste. A clumsy fellow in appearance, he is in reality very agile, moving quickly when occasion demands. He is truly a homely lizard, so much so as to be really unique. His dull black head and his broad, grayish, or sometimes reddish, back, together with his blunt tail and awkward looking legs present anything but a graceful appearance. Young individuals usually differ from the adults in having a distinctive series of broad bands on the back and tail.

A curious coincidence in distribution is the existence of a footless lizard and a snake with legs in the same locality. This phenomenon occurs in southern California, the habitat of the California boa, a snake with rudimentary legs represented externally by small spurs at the base of the tail, and the silvery footless lizard, a true saurian with no external limbs. Why is it called a lizard? There are many reasons. Unlike the snake, the footless lizard has eyelids, external ears, and a solid lower jawbone. These three characteristics are sufficient to identify the latter as a lizard, although there are other more technical reasons dealing with internal anatomical arrangements.

Centuries ago the footless lizard doubtless possessed limbs like ordinary saurians. As it is a consistent burrower, these legs must have gradually disappeared through disuse. Because of these burrowing habits, it is confined to somewhat sandy areas where it is not infrequently ploughed out by farmers. This is partly responsible for the "glass snake" story. The average farmer, upon viewing this squirmy little creature attempting to force his way back into the sand will, with customary thoughtlessness, throw a rock at it. Equipped as are the majority of saurians with a tail easily lost for protectional purposes, but regenerative, this extremity may become broken into two or three pieces by the blow of the missile. Noting the absence of legs and not recalling any snakes previously killed which broke to pieces in this fashion, the farmer concludes this is the "glass snake." These observations are sometimes improved upon to the effect that the disjointed sections go together again!

The iguanas are represented in the Southwestern arid lands by the desert iguana, a common resident of the open country, especially among the creosote bushes where it feeds on flowers and insects. While not a small lizard, it hardly compares in size with the large, tropical members of its group, though a small dorsal crest shows a close relationship to the great iguanas.

Many of this species have regenerated tails, gained by a rather stupid habit. The iguana frequently seeks refuge in holes so shallow as not to permit the covering of the tail which, left thus protruding, is frequently pulled off by hawks, road runners and other enemies.

A peculiar feature not confined to the desert iguana, but particularly noticeable in it, is its ears. Only a thin transparent eardrum is visible on either side, so that when held to the light it is possible to see through the head from ear to ear.

The tail in the saurian is (Continued on page 388)

LAND OF THE GOLDEN FRUIT

THE LOWER RIO GRANDE VALLEY, WHERE TEXAS BECOMES SUB-TROPICAL

BY HARRY FOEHNER

TUCKED away in a corner of Texas is a narrow strip of land harboring some of the most interesting plants, animals and birds of North America. Here palms and other sub-tropical trees hang their fronds over the mirror-surfaces of resacas; here grow golden fruit and lush vegetables for markets 1,500 miles away. This sliver of soil is the lower Rio Grande Valley, extending from Rio Grande City to the Gulf,—a slender finger of the tropics from two to twenty miles wide and about one hundred miles long reaching up into the central portions of the Lone Star State.

Unbroken is the cycle of blossoms, bountiful is the crop of fruit that the Valley produces. Well-kept orchards and fields of vegetables and other crops stretch back from the sluggish river which, as if wearied with its 1,200-mile journey from the Rockies, meanders aimlessly as it nears the Gulf. Here and there are impenetrable jungles of brush where land has not been cleared, or tree-fringed resacas marking the former bed of the Rio Grande. Everywhere are singing birds, the lush growth of endless varieties of plants, and the sweet soft perfume of blossoms. "Garden of the Golden Grapefruit"—thus is the Valley known commercially, due to its most famous products; but rather should it be called the naturalist's garden of Eden.

HARRY FOEHNER

ON THE LAST FRONTIER

A Rio Grande Valley goatherd on a flood protection levee, his machete in hand

The Rio Grande itself is the creator of the Valley. With the patience only streams know, it built up the floor of the Gulf with soil carried from the interior of Mexico and Texas and from the western states,—soil from every type of land, the desert, the swamp, the mountain, the grassy prairie. At first the delta was treeless, but in time the river, like a sailor who brings home mementoes from each port he touches, brought seeds of many species of plants growing along its course, and planted them during the overflow periods. A mild climate favored sub-tropical vegetation. It created a land of plenty for many forms of wild life, and animals and birds came from both North and South. Then when the settlers found the delta, it became a winter garden supplying the rich products of the soil at a time when the greater part of the nation is in the grasp of the Ice King.

The variety of blooming trees and shrubs in the Lower Valley is more diverse than in any other part of the United States. Plants from the desert, from the mountain slopes, from the acidic forest floor, from the alkaline plains,—they all mingle their perfumes and blossoms in this greenhouse of the Lone

EDRINGTON

THE VALLEY GROWS A TROPICAL FRUIT

Papaya trees near the meandering Rio Grande. Their fruit is rich in pepsin, and is practically immune from insect attack

EDRINGTON

THE VALLEY OF THE GOLDEN FRUIT

A common scene in the Lower Rio Grande Valley. Thousands of young grapefruit and orange trees stretch out under a brilliant sky, foretelling of a rich harvest to come

Star State. When the North, East and West is shivering mid its New Year's celebrations, the tall white spikes of the creamy yucca are thrusting skyward, and the first wild verbenas with their pinkish violet, reddish purple, pale blue and lavender flowers peep forth. Thus does the year begin, and never is there a break in the year-round girdle of blossom.

The Mexican influence is seen clearly in the Spanish names given to a great many of the trees and shrubs. The Americans have corrupted anacua, *Ehretia elliptica,* into knock-away but its other common name is sugar berry because of its sweet-tasting fruit. This tree blooms twice annually when it becomes a veritable snowbank of small, fragrant blossoms growing in lacy sprays. Soon afterward clusters of golden berries form. Its trunks sometime resemble Ionic columns.

There seems to be no end to the number of times the anacahuita, *Cordia boissieri,* miscalled the wild olive, seems to put forth its crinkly white blossoms with the golden hearts. The gnarled trunks of this tree are interesting and its leaves are broad, rough and thick. The olive-like fruit is pale green

EDRINGTON

THE SYMBOL OF THE LOWER RIO GRANDE

Almost ready for markets as far as 1,500 miles away are the luscious grapefruit bearing down the branches

and enclosed in a rough leaf-like shell. The fruit is said to be edible and a favorite with the Mexicans for its medicinal properties. The trumpet-shaped blossoms are particularly attractive to humming birds.

It was the good fortune of the Valley to receive as one of its gifts from the Rio Grande both the long and short leaved retamas, *Parkinsonia aculeata* and *P. microphylla.* These trees also are known as palo verde, meaning "green stick" in Spanish, because they are so verdant at all times. When it blooms, the retama shoots forth golden yellow blossoms and in the case of *P. aculeata* has one red petal which lends a remarkably distinctive appearance.

HARRY FOEHNER

A NIGHT-LOVER

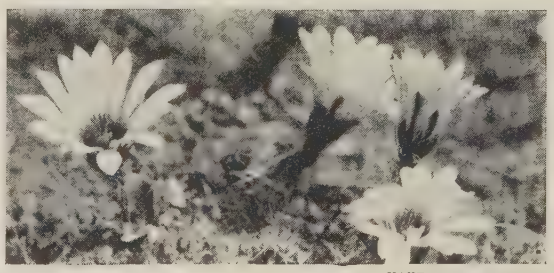
A Valley native, Acanthocereus pentagonus, chooses the evening for blooming

KATE PEEL ANDERSON

READY TO FLY

A young curved-bill thrasher whose parents pick the thorniest thickets for their nests

The tepeguaji, *Acacia pulverulenta,* is said to be so sensitive that clouds passing over cause it to change the position of its soft, fern-like leaves. This plant is the only thornless acacia in the Valley. It produces clusters of white blossoms which are followed by slender pods containing small, black seeds.



KATE PEEL ANDERSON

PLANTS THAT RUN TO FLOWERS

Berlandier's Alicoche has enormous blossoms in comparison to the plant itself

A most forbidding, thorny tangle is the junco, also known as the crown of thorns and all-thorn. The leafless shrub, *Koeberlinia spinosa,* is a tangle of green, sharp-pointed thorns and bears white flowers. Tradition has it that the junco at one time had leaves but that when it was made into a crown of thorns for Christ that it shed them in shame.

KATE PEEL ANDERSON

THEY HAVE LUMPS IN THEIR THROATS

But not from fear. The chachalaca's peculiarity is caused by a loop in the trachea. The tame young revert to wildness when mature

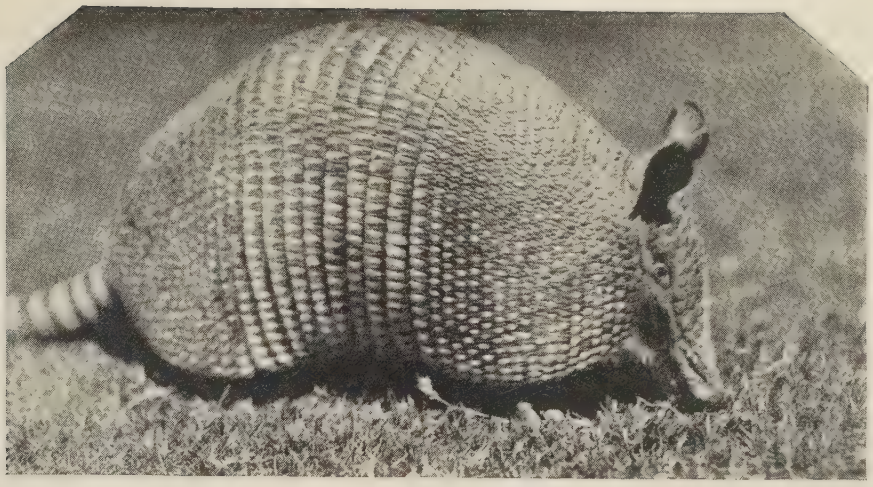
Like that of some other shrubs in this section, the fruit of the granjeño, *Momesia pallida* and *Celtis pallida,* is much more attractive than its flowers. The blossoms of the granjeño are insignificant, greenish-white objects, but the berries add highly visible dashes of deep yellow and orange to the underbrush. Because of its extreme attractiveness both when blooming and when not blooming, the *ceniza, Leucophyllum texanum,* is coming to be widely used for hedges and as a garden shrub. A white *ceniza,* heretofore unheard of, has been found by Mrs. Paul Cottrell, Valley botanist, and transplanted at her home for observation.

Many of the trees growing in this area produce hard wood but none is harder than that of the guayacan or greasewood. Wood from this ever-green, leafy shrub is hard enough to use for making bearings for machinery. This plant produces, on thick, stubby branches, beautiful violet-purple flowers, which are followed by heart-shaped pods containing two coral or orange-colored seeds.

The wood of the chapote, *Brayodendron texanum,* is used for making shuttles for cotton mills. This tree shrub also is called the Mexican or black persimmon and 'possum plum.

The ebony is one of the Valley's favorite trees when it puts forth cream-white fragrant racemes twice a year. The wood is used extensively for carving various articles and takes a very high polish. It is often confused with that of another Valley product, the brasil tree, after which the country of Brazil was named. The two plants are often found together, making the confusion considerably easier.

Rains mean a great deal to the three varieties of catsclaw, *uña de gato* as the Spanish call them, which grow in the Valley. They bloom after rains, one variety putting out snow-white, a second, greenish-white and a third, deep yellow blossoms. It is a shrub (Continued on page 388)



FINLEY

A NINE-BANDED ARMADILLO FROM THE SOUTHERN COAST

The most striking, unique, interesting and valuable animal of Texas. It suffers from curio hunters

MAMMALS OF THE LONE-STAR STATE

AGRICULTURE AND STOCK-RAISING DECIMATED THEIR RANKS

BY VERNON BAILEY

CHIEF FIELD NATURALIST, U. S. BIOLOGICAL SURVEY

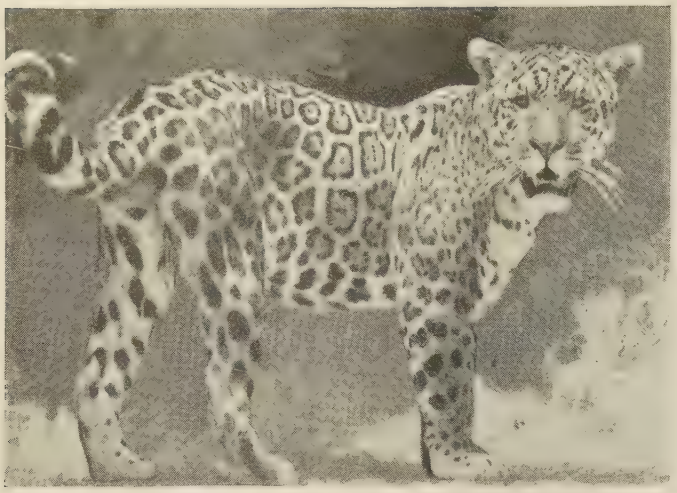
TEXAS with its great extent of territory and varied climate is rich in animal life, even at the present time, after a century of increasing agricultural and industrial development. While there are still open areas where a proportion of the native wild life can remain if given protection and permanent refuges, Texas is a state of mainly rich and fertile soil and only by wise foresight can a remnant of its early life be preserved for the enjoyment of future generations.

On the east, the state takes in great areas of swamp land and heavily-timbered river bottoms of the humid lower Mississippi Valley, with its cypresses and palmettos, its water rabbits, and possibly still a few of the big-toothed Louisiana bears. On the west it runs into the arid desert, cactus, and mesquite country of the Mexican border, where the peccary, antelope, and mountain sheep were once found in great abundance, and still cling in few and favored spots. Down through the middle of the state lies the Great Plains and prairie country that once teemed with buffalo, antelope, deer, and elk, but is now mostly under cultivation or covered with forests of oil-well derricks. Jack rabbits are the largest game. This includes the Staked Plains,

BUREAU OF BIOLOGICAL SURVEY

BOBCAT OF THE TEXAS HILLS

A stealthy killer of game and some stock. Two species, the eastern gray and western yellow, are represented in Texas



NEW YORK ZOOLOGICAL SOCIETY

A PRACTICALLY EXTINCT CAT

The last jaguar seems to have passed out of Texas in 1903. Cattle men hated him

W. L. AND IRENE FINLEY

STILL CLINGING TO FAVORITE SPOTS

The antelope, which once peopled the plains, has made room for the cattle and agriculture

or Llano Estacado, once the favorite home of vast herds of buffalo and antelope but now mostly fenced and under dry farming or scientific range management. Here all mammals but the prairie dogs are becoming scarce.

On the south, a long coast line borders the Gulf of Mexico, teeming with marine life—whales, porpoises, dolphins, and who knows what all—while in the northwestern part of the state are rugged mountains, sometimes reaching a height of eight or nine thousand feet above sea level and carrying representatives of three or four of the transcontinental life zones. The grizzly bear and the elk are gone from the mountains, but the gray mule deer, little Mexican white-tailed deer, and Texas mountain sheep are there still, and with great care can be kept there.

The cats of Texas—the great leopard-marked jaguar that once killed cattle and horses in the southern and western parts of the state; the graceful spotted ocelot, or leopard cat, that lives on deer and rabbits in southern Texas; the deer and horse-killing red panther or mountain lion of the eastern swamps and canebrakes and its gray western subspecies along the Rio Grande, and even the little short-legged, long-tailed red and gray cats of the Brownsville region and southward—are all hunters and would never have thriven in a country not rich with game. These are long-tailed cats of the genus *Felis,* but the short-tailed bobcats of the genus *Lynx* are also represented by an eastern gray and a western yellow form. These stealthy hunters of small game are not averse to young deer, sheep, or calves when available.

As the native game decreased in numbers through the rapid advance of settlement under a vigorous race of pioneer hunters, farmers, and stockmen, the big cats and other predatory animals had to go to make way for the flocks and herds of man, and are now found only in some of the big swamps or in cliffs and canyons of the rough and untillable parts of the state.

TWO OF THE SMALLER THOUGH INTERESTING MAMMALS.

The kangaroo rat, Dipodomys spectabilis baileyi, and (inset) the much disliked and prolific prairie dog

The last jaguar in Texas of which I have knowledge was killed by a party of men and boys hunting bobcats at night near Center City, in Mills County, September 3, 1903. The dogs ran it up a tree, and when wounded it took refuge in a thicket or shinnery, where, before it received the fatal shot, it killed most of the pack of hounds and one of the horses of the hunters. Its beautiful skin is now in the United States National Museum.

The large wolves are well represented in Texas

THE HOARY WOOD RAT
Smaller mammals have in recent years formed the bulk of Texas animal life

NEW YORK ZOOLOGICAL SOCIETY

DENIZEN OF PECOS AND RIO GRANDE CANYONS
The collared peccary or musk hog, which once ranged half the state, needs sanctuary

by three forms, the great, light gray buffalo wolf, or lobo, of the Staked Plains, the dark Florida wolf of the eastern timbered area, and the red wolf of southern Texas. All except the red wolf are becoming very scarce now, owing to the retaliation of stockmen for heavy cattle losses. Their usefulness as a check on the over-abundance of the buffalo herds ceased with the passing of the buffalo, and the rancher considers his own judgment concerning how many cattle he should keep and the disposal of the surplus a better guide than the mere "balance of Nature." Yet a remnant of each of these three wolves may be found, lurking in the three corners of the state, and, from a safe distance, we like to think of them as still there.

Three geographic races of the coyote are found in Texas and always will be, for these foxy little wolves thrive on civilization, having little fear of or respect for man or dogs, and seem to enjoy the game of keeping away from traps.

Foxes of three species occur in the Lone Star State—the common red fox, the little swift fox, and the tree-climbing gray fox—all holding their own except the little swift, loveliest of them all, which seems doomed to extinction. It has only the appearance of swiftness and is easily caught by dogs or coyotes, and it has a fatal habit of searching for traps and getting caught in them, if possible. It is a beautiful, gentle little animal that does no harm and much good and well merits its protection.

The little armadillo, shell pig, or tiny armored car on four feet, is, perhaps, the most striking, unique, interesting, and valuable animal of Texas if properly understood. Not valuable in dollars and cents for a curio, as it has been used until its extermination is threatened, but valuable to Texas and to all of us because nowhere else in our country can it be found or studied or its queer ways enjoyed by those who care for wild life. It is entirely harmless, and is valuable as a destroyer both of insects and of the small animal life that creeps over the surface of the ground to the injury of the crops. It likewise is a backyard pet and playmate for those interested in such strange small life. To the biologist it fills a place in the animal kingdom as a peg-toothed Edentate, connecting the higher and more complex groups of mammals with the primitive forms not far advanced above reptilian ancestors. Although it may rank higher intellectually than the marsupial opossums, it carries (Continued on page 386)

HARVEY PATTERSON

ONCE TEXAS HAD UNTOLD MILLIONS OF BUFFALO
So decimated have been their ranks, however, that these animals, at the San Antonio Zoo, are curiosities

The poorly named but beautiful stink-horn fungus thrives in Texas

JACK I. PULLEN

J. M. HEISER, JR.

In the river bottoms near Houston are scenes apparently carved out of the tropics, so lush is the vegetation along the waterways

Bluebonnets—they're Texas! The waving fields of blue lupine form the flower symbol of the state. The inset shows a single stem

H. L. SUMMERVILLE (INSET BY JACK I. PULLEN)

A. H. WRIGHT

The ocotillo, at the right, is one of the common Texas plants, but the green-spotted frog, Hyla baudini, is so rare that A. H. Wright, of Cornell University, went all the way to the Rio Grande to see him. Below is a mountainous trail in the Trans-Pecos country, where the cowboy's chuck-wagon is replaced by the pack-horse

CARRIE HOOKS

A picturesque Mexican hut in the lower Rio Grande Valley. Such abodes and their owners are passing with the settling of this rich corner of Texas

HARRY FOEHNER

JACK I. PULLEN

The opossum is up a tree in Texas as in the rest of the southern states. He is the object of much hunting and will soon need protection if his kind is to be preserved

THE HEAD OF PATRICIA CANYON, 2000 FEET ABOVE THE RIVER

The Big Bend is like a giant's playground—a strange, lost land, beautiful, yet terrible in its vastness. This canyon is still unexplored

THE LAST FRONTIER

THE BIG BEND COUNTRY OF TEXAS STILL SLEEPS, UNTAMED

BY CLAUDE S. YOUNG

ILLUSTRATIONS BY THE AUTHOR

OF ALL the great state of Texas, the Big Bend Country is least known not only to the native Texan but to the country at large. It reaches southward from the gleaming rails of the Southern Pacific railroad to the turbulent waters of the Rio Bravo, as the stream is called, to cover a territory greater in extent than the whole State of Delaware; and yet to most people it is just a big open space on the map, unknown, forgotten.

It is not a new country; it was well explored long before the time of Columbus. Its ancient trails and roads, that once led in dim lost days to the land of the Aztecs, are still there, although long deserted, and although eroded by time and the elements. Over some of the aged thoroughfares the early Spanish explorers trod in the quests for the mythical Seven Cities of the Cibolians; and later, over some, came that great hoard of silver from Chihuahua to the east for shipment to the then mighty Spain. But since that day, except for the occasional finding of some padre's diary, or the spasmodic rustle of a newspaper story, the Big Bend has dropped back into the silence of the past, to sleep again in its rugged grandeur, wrapped in its mysteries and traditions that are fast dying out with the "old ones" who knew them all.

It is a strange, wonderful country. Its elevation ranges from the high plateaus around 8,000 feet above sea level down to 2,000 feet where the great Rio Grande has cut its way through three mighty gorges, the Santa Helena, the Mariscal and the Boquillas canyons, whose rugged perpendicular limestone walls rise two fifths of a mile above the surging water. When not confined in the purple depths of these chasms, the river wanders across the barren deserts of the Terlingua, Mariscal and Boquillas, and after freeing itself from the last deep-etched ravine, it winds its tortuous way down through some six hundred miles of rough country to the Magic Valley, where it finally reaches the Gulf of Mexico.

The Big Bend Country is like a giant's playground. It is a strange, lost land, beautiful, yet terrible in its lonely vastness. There is an apparent disregard for Nature as we know her. The queer plants that range through its multi-colored desert wastes seem to have been put in the ground as a mockery to life. The cactus, lechuguilla,

dagger, and the unholy ocotillo plants that grow on the barren mountain sides and raise their long, gaunt, snake-like limbs to tear anything they touch with their ugly thorns, cause one to wonder what made such an inferno of grotesque horrors. Water is the answer, or rather the lack of it. Such is the desert. Each plant is fighting every minute for its measure of moisture to sustain life. Nature has added the thorns to help preserve the desert species and made their fibres resistant to evaporation.

But when you look to the east before sunrise in the new morning, when the first flush of false dawn sends its pink wave of light rushing across the gray desert like a mighty flood; when the first rose glow catches the high rugged yellow peaks of the Chisos (Ghosts) mountains and turns them to a brilliant gold; when the Chinita mountains change from the purple of night, as you watch them, to every brilliant hue of the rainbow; when the great bowl of the lower desert awakes from the gray shadow of the passing darkness to a flowing sea of flashing colored mists, you stand mute with wonder until the sun brings its first true morning rays over the great eight thousand foot wall of the eastern Carmen range.

WHERE THE RIO CARVED DEEP
Through the hog-backed Mariscal mountain went the Great River, to create the awesome Mariscal canyon

In all the world there is no other spectacle like it. It is due to the strange topography of the lower bend and the dry crystalline atmosphere. Physiographically, this territory is as if a great watermelon had had a wedge-shaped slice cut out from end to end, and that slice was jammed deeply back in the void it left. The sides are the two great scarps, the Santa Helena's 2,000-foot wall and the Carmen's 8,000-foot range, which face each other fifty miles apart. The pushed-in section is the desert, sunk between the scarps, so that when the sun rises or sets there is a false dawn within the basin.

Probably this strange phenomenon is responsible for the many legends of cities roofed with gold that the early Spanish explorers hunted; and the cities themselves—you can watch them at every sunrise and sunset, their turreted battlements so brilliant and realistic, so clear in the crystalline air that you yourself wonder if they are not really there.

With the sun an hour high, it is hot. Every vestige of moisture and mist is gone; there is only heat, dazzling heat. The whole country soon takes on a shimmer that hurts the eyes and burns the hide. The glare is almost unbearable as the light is reflected from the barren rock-strewn desert. There is no shade, no trees, only the low thorn-covered shrubs and the ghostly ocotillo's snakelike arms reaching with their catclaw thorns. That is the desert; hundreds of miles of it, barren, waterless, dead.

Abruptly out of the desert the Chisos mountains raise their high rugged peaks, gleaming in a clear blue sky—truly a wonderful sight when viewed from the flat below. As you follow up the rough canyons from the hot plain into the Chisos mountains the foliage begins to change. From the thorn-covered cactus, yuccas, ocotillos, and their desert kindred, the foliage takes on a more green and kindly aspect. Trees appear and the bushes become different. Grass begins to show in little knots and the country loses the lonely barren look of the lower levels. You reach the high valley that is surrounded by a wall of peaks. The country here is in great contrast to the desert below—green grass, knee high, mountain flowers, millions of them, springs, tall Mexican pines, straight and true for seventy feet, juniper and other trees, and a host of flowering bushes that fill the mountain air with fragrance. Bees are working on the blooms. And yet you are only a few hours by horseback from the burning rocks of the desert; but you have climbed four thousand feet.

From high up in the Chisos mountains to the west can be seen all the country to the Chinita peaks. The dry, clear air seems to minimize the great distance. The horizon fades away until the sky and earth meet in a purple haze. There seems no end to the vision. You can see the Studi Butte mines and the Chisos Mining Company's plant distinctly, although they are many miles away.

THE CHISOS MOUNTAINS RISE 4000 FEET FROM THE DESERT

To see them when the first rays of the false sunrise turn them to pure gold is to feel the beauty of the Big Bend

To the south the Mariscal mountain rises like a great hogback from the lower desert floor. You can see the Rio Grande river disappear into the great Mariscal canyon, cutting the mountain in two, and emerge again from the east side of the great, rounded slope and flow through the desert towards Boquillas.

In this lower desert the famous quicksilver mines are located. The Chisos Mining Company, at Terlingua, and the Mariposa and Studi Butte mines are among the most productive in the area. With the coming of power and transportation this whole district will probably become one of the great quicksilver districts of the world.

The smelting of the cinnabar ore, or rather the roasting process to evaporate the quicksilver from the ore, is done with mesquite wood in a furnace, and the gases are condensed back to quicksilver in long tunnels. Fuel and water are the great problems. Fuel oil is hauled by mule teams nearly a hundred miles to run the Diesel engines to generate the electricity. Some of these mines have been operated nearly fifty years. The district put out over a million dollars in quicksilver under the high prices of 1917.

Silver, gold and some copper are also worked. But it is the same story—lack of transportation is holding back this rich wilderness. Wood is getting scarcer and the hauls longer. Burro teams with wagons supply the need now. They are as primitive as they were fifty years ago, but they are the only transportation possible until power comes. And this power is running to waste through the great canyons of the Rio Grande.

To the west of the Terlingua district is Shafter, on the old road from Presidio to Marfa. This mine has been in operation more than fifty years (Continued on page 385)

IN THE TERLINGUA DESERT ARE THE MULE EAR PEAKS

They are landmarks for a hundred miles around, and typify the lonesome barren land through which flows the Rio Grande

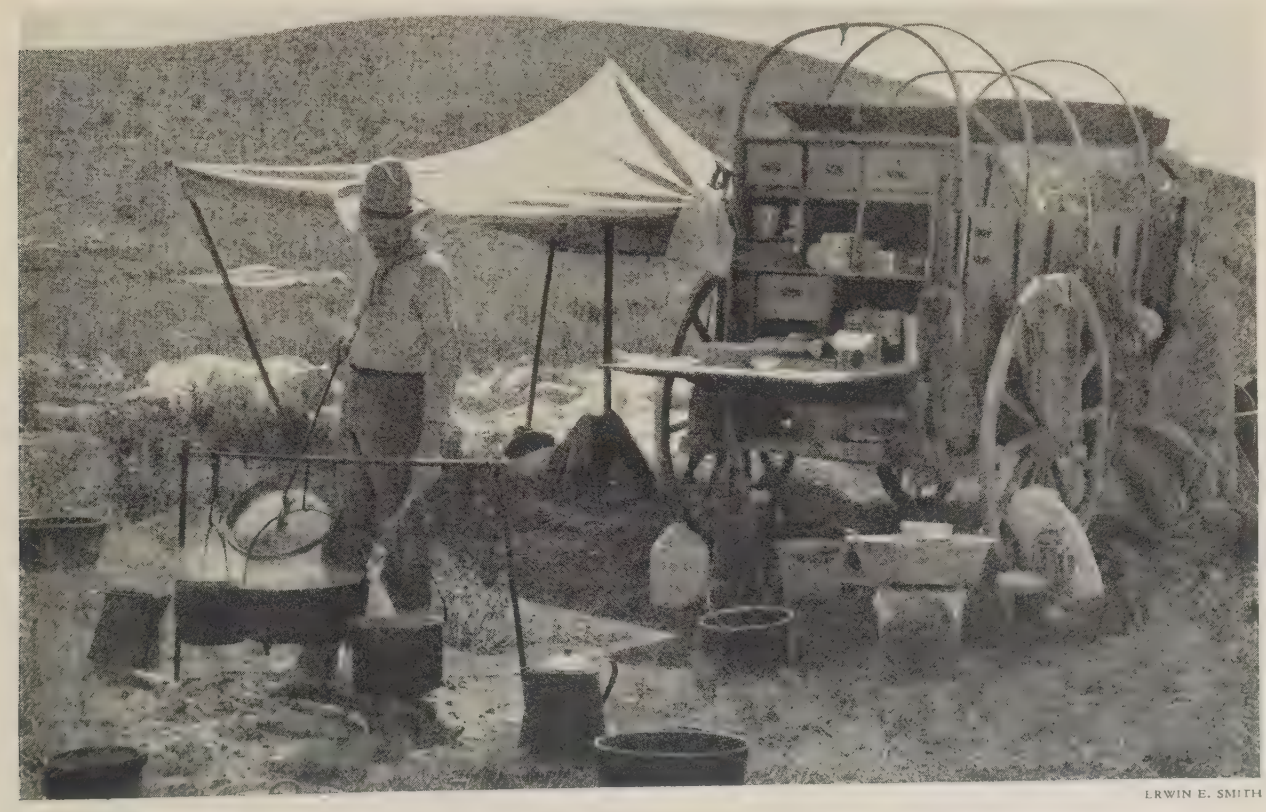
LONGHORN, LASSO AND LATIGO

BY J. EVETTS HALEY

FROM the time the *conquistadores* of New Spain first gazed upon the broad ranges of the Tejas, and claimed them for the bounty of the King and the glory of God, Texas was destined to be grazed by vast herds of cattle and of horses. Wherever they tramped their trails into the sod, which was across the face of the Western World, Texas steers stirred the imaginations of men, even as their flinty hoofs stirred to high heaven the dusts of the trail. And to this day where "Texas" is spoken, cattle are thought of, and the head of the longhorn is as much an emblem of Texas as the lone star.

The story of Texas ranches begins almost two and a half centuries ago. With the early Spaniards, the most tireless explorers of the Southwest as well as the most zealous seekers after treasure, trailed herds of Mexican cattle, dependable commissaries "upon the hoof." Spaniards brought the first cattle to eastern Texas in 1690, when they established the mission San Francisco, and began christianizing the Indians. But the Tejas proved incorrigible, and preferred stealing the *padres'* cattle to chanting *Ave Marias*; within three years the mission was abandoned. Spain forgot the land for twenty more. But her frontiersmen left cattle and horses ranging across the sandy, red hills of East Texas. The state has never been without them since. They figure largely in her economics and her history; in her songs and in her stories.

Because of its extreme mobility ranching has always been a pioneer pursuit. The Texas industry dates from the establishment of the San Antonio and Bahia missions in the first fourth of the eighteenth century. For a hundred



ERWIN E. SMITH

THE CHUCK-WAGON YET ROLLS OVER THE TEXAS PLAINS

And the cook is still boss of his skillets, pots and pans, while the rest of the boys ride the range. A scene on the JA ranch

GETTING THE MOUNTS FROM THE REMUDA

Each man has a string of ten to twelve ponies and may cover seventy-five or eighty miles a day during round-up

years those soft-tongued riders from the South watched their cattle grow to great herds, while they themselves extended the far-flung frontiers of Spain. During the century following the founding of Bexar, scattering *ranchos* or *haciendas* spotted the country between there and the Rio Grande. Anglo-American settlers, coming into the state, had discovered the ease with which cattle grew, and Texas had one hundred thousand head by 1830.

Then came the war with Mexico. Range men from "the states" fell upon the more swarthy, easy-going riders from below the Rio Bravo, and Texas trails were blazed with blood. Mexican *rancheros* fled from their ranges, leaving their cattle to become spoils of war. Adventurous Texans rounded up these herds and drove them to their own ranges or to Louisiana to market. Vicious battles were fought, riderless horses drifted back to jacal doors, and the results passed into the unrecorded history of "the bloody border."

DANE COOLIDGE

TWO OF THE EARLY SETTLERS

The late Charles Goodnight, pioneer and Texas-builder, with one of his buffalo bulls

While Texas was yet a republic, cattlemen began trailing their cattle to market. Early American settlers had trailed small bunches to the Atlantic; the Spaniards had trailed many to new ranges throughout the Southwest; but the Texans advanced trail work to a science, and gave to history the most stirring, remarkable epic of range life the world has ever seen. Before the Civil War Texas cowboys trailed small herds to New Orleans, Kansas City, St. Louis, Chicago, and other markets. With the discovery of gold in California, they trailed lanky, longhorned steers two thousand miles and delivered

CORRALLING A HERD ON THE XIT THIRTY YEARS AGO

These Herefords will soon be on their way to Kansas City, California or Chicago to supply the country with beef. Note the calves in the foreground

them as beef at hungry mining camps. The war broke, markets disappeared, trails faded beneath growing grass, while Texas ranges teemed with three and a half million cattle.

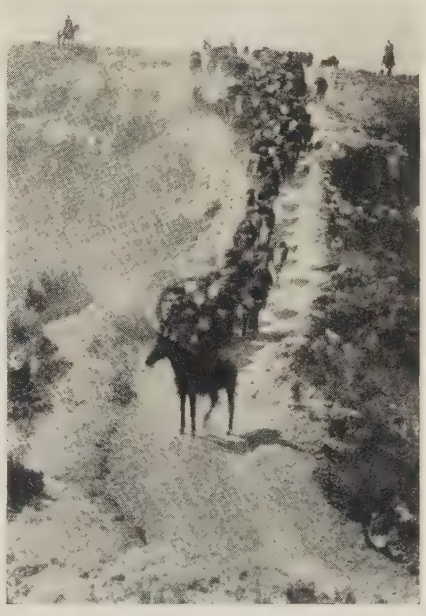
Reconstruction found Texas bankrupt, though an estimated six million cattle grazed her open ranges. Everywhere men began driving herds to Louisiana, Missouri, Arkansas, Kansas, New Mexico, California — anywhere that men would pay a pittance in gold. Upon the ranges they were hanging cow thieves and shooting outlaws; upon the southwest border battling Mexicans; upon the trail clashing with renegade Jayhawkers, and almost everywhere fighting elusive Indians. But the cowboys were used to strife and feud, and the trail quickly became an institution of the cow country. It closed in the middle nineties after an estimated ten million head of cattle and a million horses had streamed out of the state along its various ramifications. Cowboys rode proudly, buoyantly, recklessly upon the trail, carrying not only cattle, but the methods of handling them—the technique of the range—to the cow country from Chihuahua to Saskatchewan. Texas had become the cradle of the cattle industry of the Western World.

In addition to this vast movement of cattle to the north, there was, with the close of the Civil War, an immense expansion of Texas ranches. Only half the state was occupied. To the west of the Cross Timbers, that belt of post oak that almost cuts the state in two, the mighty roaming warriors of the Comanche and Kiowa still lived upon the meat of the buffalo. Into this wide stretch of prairie country that gently rolled away to the rim-rock of the *Llano Estacado*, ranchmen trailed and located herds. Everywhere lines of settlement were expanding westward, and in less than twenty years the pastoral frontier had doubled the settled area of the state.

Cowmen on public domain arbitrarily divided the land between themselves, recognizing natural or imaginary boundaries, along which cowboys "rode line" to keep their particular brands from straying beyond prescribed ranges. In those days of free grass and water, each cowman recogniz-

THEY DOT THE COW-COUNTRY NOW

Windmills, endless miles of barb-wire, and smaller herds and ranches mark the present era of cattle-raising



DRIVING THE TEXAS TRAIL

The herds are on their way to the market, perhaps a thousand miles away

BACK IN THE LONG AGO—CHUCK TIME ON THE RANGE

Burned with the Texas sun, chilled by the winds, toughened by constant riding and cow-punching, these XIT men did not lack for health

ed the other's rights, and, biding by a system of unwritten law, lived in perfect harmony.

Then in the early eighties came barbed wire to revolutionize the West. With wire came ownership of lands, improved herds, the end of the trail, the end of free range, and more strife and feud. The Fence Cutters' War, which spread from Red River to the Rio Grande, pursued mainly by renegades who were fighting for free grass and water, is a bitter chapter in the chronicles of Texas cattle. But fences rapidly stretched their prickly lines wherever good grass grew, men rode these lines with rifles upon their saddles, and the Legislature declared fence-cutting a felony. Wire had come to stay. Except for the eternal struggle with cattle rustlers, this was the last serious warfare among Texas men who ride in the dust of cattle. Along with the many changes wrought by barbed wire, came the Texas ranch much as it exists today, the product of a fascinating evolution.

It is always under fence. It may consist of a few thousand acres; it may embrace a million. Usually its ranges are fairly blocked together, fenced around, and sub-divided into as many pastures as the owner desires. Near the headquarters of any ranch of size is a horse pasture, where the saddle horses, or remuda, may be kept. Nearby is usually an enclosure of only a few acres, called a "trap," where a rustling horse is kept over night for the purpose of driving in the remuda of a morning. Out over the range graze the owner's cattle, horses, sheep, or goats. Today, there are comparatively few horse ranches. Goats, or sheep, and cattle are sometimes ranged upon the same ranch, though usually in separate pastures. In great sections of the state where there is much brush, ranches once devoted wholly to the raising of cattle have been fenced with wolf-proof wire, and given over to sheep and goats. Mexican hands, called *pastores*, seem to make the best herders, while a Texan usually superintends the work.

DRAGGED TO THE BRANDING IRON

A Matador cowboy has roped and is bringing in an unbranded calf

Water is the first consideration of any ranch. Once springs and streams were absolute necessities of the range. Then, in the eighties, windmills came into general use, wells were dug, tanks were built, and grass lands devoid of live water quickly filled with thousands of cattle. Upon most of the ranches west of the ninety-eighth meridian, wells and windmills are necessities. Water ranges in depth from a few feet to several hundred, but almost always there is sufficient wind to lift it to the surface, where it pours into earthen tanks. Cattle water daily at these tanks, during hot weather; perhaps every other day during cold, and range back away from the waterings several miles after the best grass.

Many small ranches are operated entirely from the headquarters. Large ones maintain camps upon remote sections of their ranges where are kept cowboys who daily ride their rounds looking after the cattle, inspecting the waterings, and riding fence. These cowboys are sometimes married men; more often they are single. The majority range in age from eighteen to forty—the life is hard on old men. Almost all are rough and ready cooks, capable windmill men, fence builders, fair mechanics, but most of all, expert horsemen. Ranch life today demands a wider range of activity than that of forty years ago. Men work upon the ground more; consequently there are fewer fine cow horses, fewer expert bronc riders and finished ropers.

To name a few of the most prominent Texas ranches, O'Connor's, Rancho de la Parra, Kings, Spurs, 6666, Figure 2's, Matadors, and the JA's, is almost to indicate the geographical extent of the western half of Texas. There, as well as in the Coastal Plains country, the Texas cowboy did not pass with the mustang and the longhorn, and will not pass so long as climate and topography govern the pursuits of men. The chuck wagon with its bed rolls, the cook mixing his sour dough, the wrangler with his remuda, the cowboy—in his shop-made boots and jingling spurs—flanking calves or tailing-up creepy cattle—all this is still a part of the ranch life of Texas.

West of a line drawn through Fort Worth and Austin, and from Red River to the Gulf of Mexico, lies in the main the present ranch country of Texas. There is much grass to the east, but agricultural lands predominate. To the west, particularly in the brush of the border, the high, rough lands of the Trans-Pecos, the picturesque Hills, the Edwards Plateau, the Staked Plains, and in the canyons of the Panhandle, Texas cowboys will long ride with the ease of natural horsemen.

Throughout this territory land is still measured by the section, and fifty square miles is not a "big" ranch. The Nueces, or Brush Country, with its tangles of mesquite, *huajilla,* and coma, has always been grazed by herds of cattle. With the Coastal Plains, it is still the supreme breeding section of the state. Between Corpus Christi and Brownsville lies the Rancho de la Parra of four hundred thousand acres, furnishing range for twenty-five thousand cattle, unnumbered droves of turkeys, hundreds of havalinas, and large herds of deer. Thousands of waterfowl, both resident and migratory, find shelter upon its ranges during the winter, and it is the habitat of a varied bird population during the summer. Adjoining it to the west, and almost spanning the distance from the Nueces to the Rio Bravo, lies the King Ranch of well over a million acres, now the largest range in Texas and the sanctuary of many tradi- (Continued on page 386)

TEXAS—GARDEN LAND

BY BERTHA McKEE

WHEN Anglo-Americans came to Texas a hundred years ago, they situated their homes amidst the floral plenitude of which Joutel, chronicler of La Salle's mistaken landing on Texas shores, had written a century and a half earlier: "Nothing is more beautiful to behold than those vast plains when the blossoms appear; a thousand sorts of different colors, whereof many have an agreeable scent, adorn those fields."

But Nature's garden did not suffice. With that passion for ordered plots which has everywhere characterized civilized man, the colonists moved magnolias and glossy-leaved wild peaches, both evergreen, from the forest and set them row by row in their sanded yards. Returning travelers brought seeds and plants, and before long the colonists were nurturing the flowers they had loved back home. Gardens on some of the early plantations were elaborate and beautiful. The pomegranate, the rose, and the orange were early introduced. At least one garden, near the Louisiana line, boasts today a narcissus planting that has blossomed under six flags.

Women living along the old San Antonio road found in passing immigrants a source of accession to their gardens. Hungry for "tame" flowers, they would go down to this road carrying hams, eggs, milk, and butter, which they offered in exchange for seed, bulbs, and cuttings; often the immigrants divided their precious store. Thus—as well as through purchase from seedsmen in far away New Orleans and New York—tiger lilies, bleeding heart, white and blue flags, jasmine, portulaca, geranium, violet, and such roses as Giant of Battles, Lady Banksia, Seven Sisters, and York and Lancaster, got a start in Texas.

N. E. RUTT

SPANISH DAGGER IN BLOOM

The yucca in an old garden adds distinction

From colonial days onward two tendencies have operated in the making of Texas gardens—the use of native shrubs and trees, and a hankering after the blossoms, even the forbidden blossoms, of the North and the East.

These twin desires govern garden-making over the entire state; but the gardens of one section differ widely from those of another. They must differ; for the climates are vastly unlike. The Rio Grande Valley may pass a winter without frost; when blue northers howl, the Panhandle has "nothing between it and the North Pole but a barbed wire fence and that's down." The average annual rainfall in one east Texas county is 56.68 inches; in the most western county it is 8.12 inches. In southeast Texas along the

EDRINGTON

A FAVORITE IN TEXAS GARDENS AS AN ORNAMENTAL

The handsome oleander finds itself at home in midst of western company

coast the air is so damp that a washing requires the whole of Monday for drying; in parts of west Texas it dries in half an hour. Many plants that flourish under the soft touch of the gulf breeze shrivel to the north and west, where the wind blows hard and dry. Even summer temperature, the most nearly equal of natural conditions, varies from the heat on which bananas and dates thrive to the coolness—in the Davis Mountains—that apples need.

The gardens of west Texas are characterized by many curious plants: the great yucca, known as Spanish dagger; hesperaloe, or red yucca, which from April until November sends up its slender bloom-stalks; the agave, which grows from ten to twenty years—not a century, as popular conception has it—then blooms and leaves the ground to its descendants; castuses in a hundred strange forms, the spiny stems most seductive in their season with vari-hued blossoms; ocotillo, the devil's walking cane or *Fouquieria splendens* that is flame-tipped in spring; sotol, *Dasylirion texanum,* with saw-edged swords for leaves; *Leucophyllum,* which the Mexicans call ceniza—ashes—from the color of the foliage, and which frontier folk called barometer bush from its habit of covering itself with orchid flowers so soon after a rain that it appears to have forecast the weather; agarita—the name corrupted from the Mexican *agrito,* meaning little sour—a native barberry fragrant with yellow blossoms in February, afterward bright with scarlet fruit good for jelly, and green with foliage the year round. All these plants are native, and finely suit the Spanish architecture which, whether by reason of climate or historical suggestion, has become common in Texas, as in the entire Southwest.

The southeast Texas plots are remembered for their palms, oleanders, altheas, poinsettias, cape jessamines or gardenias—which were so profuse some thirty years ago that decoration committees used them to border the windows and doors of village schoolhouses at Commencement time,—tuberoses, and Spanish moss hanging from live oaks.

In south Texas and the valley of the Rio Grande hibiscus glows against white walls, bougainvillea climbs over the porches, poinciana—called bird of paradise from its plume of scarlet stamens—makes gay the humblest Mexican yard, bananas flutter their torn leaves, the huisache—an acacia either native or naturalized—is covered in spring with yellow balls of perfume, and retama, or parkinsonia, is a shower of gold from early until late summer in gardens as well as along water courses.

JACK I. PULLEN

CACTUSES ARE MUCH USED

This pin-cushion variety is to be found frequently

The accent of the west Texas garden is xerophytic and that of southeast and south Texas semi-tropical. Trains passing through Alvin, to the east, are boarded by vendors of cape jessamine; from Alpine, to the west, are shipped annually many sacks of *siempre vive,* or resurrection plant, which months after it is lifted from some rocky ledge will turn green after being dampened.

Yet the influence toward homogeneity does operate. Ceniza blooms and Spanish dagger grows to a fine stature where the air hangs heavy with moisture; oleanders, far up the state, though they may freeze in a severe winter, will come again from the root, and retama and huisache have claimed the east and the west—but not the cold north. The most obvious common feature is the use of evergreens, both broad-

B. C. THARP

THE DAINTY BEARD TONGUE

Half a dozen species in red, white and lavender deserve cultivation in Texas

B. C. THARP

A WILDING OF GRACE AND BEAUTY

The white, yellow and pink evening primroses are sometimes found in Texas gardens

leaved and coniferous. It is a nice matter to plant enough evergreens to avoid winter's bareness and yet not enough to forego the returning beauty of spring. One of the best types is the Italian cypress, growing slim and tall, and taking the place the poplar holds farther north and west.

Some favorites are as much at home in one section as in another. If a single flowering shrub or tree were named as most characteristic of Texas gardens, that shrub would be the crepe myrtle, not inaptly called from its crinkled flowers "the wonder tree of the South." Hardly a garden in the state but has its specimen or hedge of bridal wreath, or spirea. Japanese quince, *Cydonia japonica*, has a wide range, and is extensively planted for its early brilliance. Plumbago grows almost everywhere. Salt cedar, or tamarix, finds the banks of the Pecos as congenial as ridges of coastal sand. Over most of the state the pomegranate retains its early favor. South and north, east and west, antigonon, a perennial vine introduced from Mexico, and popularly known as coral vine or queen's crown, clothes houses and trees with rose-hued loveliness from midsummer until frost. Blue morning-glories cover ugly places and climb high into trees. Wistaria, a species of which grows wild in east Texas, is planted in most sections of the state and its first blossoms awaited—so hearsay repeats—for as long as Jacob served Laban in hope of Rachel. Roses bloom in the spring with a two weeks' burst of color and fragrance, blossom along through the summer, and come to their finest flowering in fall. Wholesale growers in east Texas ship roses to all parts of the United States. Amarillo, in the distant Panhandle, has adopted the slogan "A rose garden for every home." Victoria, against the coast, calls itself and is called "the city of roses." From the single bush beside a negro's cabin to municipal parks containing thousands of bushes, the rose is, throughout Texas, queen of flowers.

B. C. THARP

THE TEXAS BLUEBELL, A NATIVE GENTIAN

Many garden enthusiasts are trying to cultivate it, and a few are succeeding

A few shrubs and flowering trees cultivated in Texas gardens have been named. Their use cannot be over-emphasized. Many home owners take an especial pride in them; others buy them from nurserymen without knowing that they cover the hills to the west or adorn the woods to the east. Redbud, which mingles its reddish-purple blossoms with the white flowers of plum along creeks over much of the United States, is prized in gardens both for its March bloom- (Continued on page 397)

JACK I. PULLEN

THE JOYS OF THE LINE AND THE REEL

Fishing is a popular sport in the lakes and rivers of the coast country. Thus does Texas lay just claim to the fisherman's affections

PARADISE OF ANGLERS

SPORTSMEN AND COMMERCIAL FISHERMEN FLOURISH IN TEXAS

BY GEORGE A. SEEL

THE cold, swift-running streams in the rocky hills of Western Texas; the sedately moving brooks and rivers of the rolling prairies of north and east Texas; the sluggish bayous in the lowlands; the pleasant bays and coves on the coast; and beyond these the ample bosom of the Gulf of Mexico with foam-crested breakers rolling in lazily to a broad, tawny beach—all offer varied delights to the fisherman.

Texas has many charms for those followers of the gentle Walton who like to rest at ease under a spreading tree on the grassy margin of a placid stream, reflecting in philosophic calm on the beauty and benevolence of Nature. Such are well satisfied at the end of the day whether one fish or none grace their baskets, feeling amply repaid for an outing among the flowers, the birds, and the trees.

And for anglers of more robust inclinations, who thrill to the prospect of a battle of wits and muscle; to whom fishing is an exercise calling for stamina and skill; to whom there is no sweeter music than the whirring reel, the swish of line through water, the throb and tug of a worthy piscatorial foe struggling to escape the hook—there are surf casting on the gulf beach, trolling in the gulf for tarpon, sergeant fish, kingfish and jackfish, and river casting for bass and crappie.

On summer week-ends, and in fair weather during other seasons of the year, there is a veritable hegira from cities to favorite fishing places. The roads are thronged with automobiles bristling with poles and rods and bursting with office workers, factory hands, salespeople, eager for a brief surcease from stultifying walls, hungering for the freedom of the out-of-doors. Texas, indeed, may be considered a paradise for anglers.

Most spectacular of the game fish, distinguished for his penchant for hurling himself into the air like a streak of molten silver, the tarpon is easily the most prized trophy of anglers on the gulf coast. During the late spring, summer, and early fall months, tarpon may be caught anywhere from Point Isabel to Sabine. For exhilarating sport, tarpon fishing is supreme. The extraordinary beauty of this giant herring, glittering with silver scales—a coat of polished mail—and the terrific power

of his leaps, surges, and rushes, provide an experience never to be forgotten for the angler who succeeds in landing one.

Essentially a warm water fish, the tarpon moves northward in the spring and southward in the fall. During the winter months tarpon are caught in the gulf off Tampico and Vera Cruz. Commercial fishermen have no love for the tarpon, his furious lunges playing havoc with their nets. A blow from the tail of a tarpon has all of the deadly qualities of a kick from a Missouri mule. Kingfish, a large member of the mackerel tribe, and jackfish are also splendid fighters and furnish exciting sport.

Redfish and trout are taken on the gulf coast at any season of the year, but mackerel come and go. The mackerel is especially partial to clear, green water, teeming with tiny silver fish, the small fry of the sea. Darting through the water like shafts of blue steel, mackerel appear in vast schools on the coast when water conditions are favorable. They are taken chiefly with hook and line. It is not uncommon for two men in a small boat, trolling for mackerel, to catch hundreds of fish in a day. Mackerel will bite at almost any sort of trolling bait; for still fishing, shiners and peeled shrimp are preferred.

Speckled sea trout and redfish, together with mackerel, form the most popular food fish on the Texas gulf coast, and comprise the bulk of the fish handled by dealers. Most of the red snapper catch is shipped inland. Trout and redfish spawn in the gulf and enter the bays through numerous passes. Virtually all of the bays were closed to seine fishing, however, in the spring of 1930, and as seine fishing is practicable in the gulf only in mild weather, a noticeable decline in the market catch has resulted, although sport fishing has benefited.

One of the characteristics of the redfish is its tendency to ascend shallow bayous and inlets, rooting for shrimp and small crabs among the weeds and grass. The sea trout is strictly a pelagic feeder, with shrimp its favorite food, and because of the cleanliness of its diet has flesh of unusual sweetness and delicacy of flavor. Texas northers, when severe, are disastrous to redfish, trout and other fish in the bays. In January, 1930, a sudden and sharp drop in temperature to about sixteen degrees was followed by several

A DAY'S TROPHY—SOME CATCH

Tired but happy anglers after a day of battle with fish at the entrance to Galveston channel

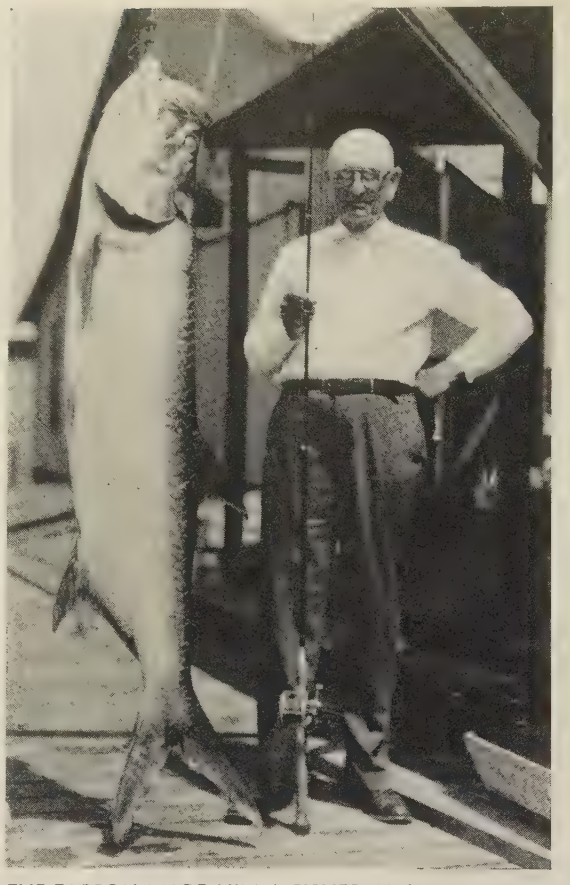
WHERE BOATS LEAVE FOR THE DISTANT SNAPPER BANKS

A part of the fleet at Galveston. Gloucester fishermen are no more heroic than those who brave the Gulf for salt-water treasures

days of freezing temperature. Redfish and trout, numb with cold, floated on the surface of the bays and were picked up by thousands.

Pompano, flounder, sheepshead, sand trout and croakers are other varieties of sea life which figure in the commercial fisheries of Texas. The black drum, which also flourishes in coastal waters, is taken in considerable quantities, and when of medium size, is excellent eating. The drum is a sort of marine hog, feeding on tiny mollusks in shallow, mud bottoms, oftentimes standing on its head, with tail out of water. Occasionally a huge jewfish, largest of the grouper family, or a giant sea turtle is caught by some lucky commercial fisherman.

Salt water fish production seldom exceeds five million pounds annually but gives employment to several thousand men. These figures may cause surprise, since Texas has so long been associated in the public mind with things of enormous size, that one might naturally expect her commercial fisheries to be of proportionate dimensions. There is a bright side to the picture, however, from the viewpoint of the sportsman, and as the Lone Star State is making a strong bid for tourist patronage, good sport fishing is an asset of unquestionable value.



THE TARPON MADE HIM A FISHERMAN

After landing this 120 pound silver king, Dr. John P. Fruit, dean of William Jewell College in Missouri, became an ardent fan

An extensive system of fresh water fish hatcheries is maintained by the state to replenish the rivers and lakes. Eight hatcheries were in operation in the summer of 1930, mostly in Central and North Texas, and plans were made for others in East Texas. The state has no salt water fish cultural stations, but under the White Bill, signed by President Hoover in May of this year, the federal government is to establish a station on the Texas coast in the vicinity of Galveston, which will also offer facilities for a long-felt need—marine biological research and a systematic study of fish life on the gulf coast.

Unrestricted fishing of lakes and streams back in the pioneer days depleted the natural resources of these waters. "Fish frys" were a great diversion of the early settlers, men on horseback dragging seines through the rivers, and catching astonishing numbers of fish for the assembled throngs, gathered from far and near, who enjoyed a feast. Drastic protective measures now restrict the catch of both fresh and salt water fish. (Continued on page 391)

AN IDEAL PLACE TO DROP YOUR LINE FOR A DAY'S PLEASURE

A quiet scene on a "resaca" or "bayou" near Brownsville. Here black bass will make life interesting

VIRGIN LONGLEAF PINE IN EAST TEXAS—A VANISHING STAND

Typical of once common forests of this species. The trees are being turpentined, which signs their death-warrant

TEXAS AND HER TIMBER

THE PAST, PRESENT AND FUTURE IN FORESTRY

BY E. O. SIECKE

DIRECTOR, TEXAS FOREST SERVICE

VISITORS entering Texas at any railroad point west of Texarkana or from the west, and not having occasion to visit the eastern portion of what is known as East Texas, must gather the impression that Texas is an agricultural and livestock state, with only scattering forests of scrubby oak, mesquite and cedar. This impression is strengthened by earlier school geographies, novels, and some quite recent magazine stories, all of which emphasize the longhorn steer and the cowboy, and occasionally speak of cotton plantations and singing negro cotton pickers. It must be confessed, too, that many Texas citizens residing in the central, southern and western portions of the state are so unfamiliar with our forests and forest industries as to feel that they are of only minor economic importance. Strange? Not when one stops to consider that, as the crow flies, it is some seventy-five miles farther from Texarkana, in the northeast corner of the state, to El Paso, in the southwest corner, than it is from Texarkana to Chicago, at the foot of Lake Michigan!

To find the commercial forests of Texas one must look into that part of the state lying east of the Houston branch of the Missouri Pacific Railroad. There, forests form the western extremity of the southern pine belt that reaches from Texas to Delaware. There are thirty-five Texas counties included in our commercial timber area, referred to locally as the "piney woods", covering more than eighteen million acres. This is an area larger than the combined areas of New Hampshire, Vermont, Massachusetts and Rhode Island. More than ten million acres of this area today carry forest growth and most of it is considered as being chiefly valuable for timber growing.

Extending southward along the eastern border of Texas from the Red River to the city of Houston, near the

Gulf of Mexico, this timber belt produces annually more than one billion, five hundred million board feet of pine and hardwood lumber and gives employment to some twenty-three thousand persons each year, while the pole and tie timber removed annually add another half billion board feet to the yearly production. This production gives Texas a rank of sixth to eighth each year in the list of lumber-producing states, and maintains an industry that employs more wage earners than any other manufacturing industry in the state. It is no small economic item.

About nine hundred thousand acres of virgin pine timber and approximately the same amount of virgin hardwood of commercial value remain out of the original commercial forest area of sixteen million acres. Good second growth pine is found on about three million five hundred thousand acres and there are some two million acres of second growth hardwoods. These areas are already supplying a considerable portion of the present lumber cut and are growing the stock that will supply the total cut when all of the virgin timber is gone. There is an additional area of some three million acres that does not at present carry much, if any, second growth timber of value. This area, in large part, must be reforested by planting before it will again produce commercial stands of timber.

FIGHTING FOREST FIRES—A MAJOR TASK
While not spectacular, blazes cause enormous losses, and forestry work concentrates on fire prevention

This brief survey indicates that on the whole, our forest resources have been harvested with little thought about the future of the land, although most of it is best adapted to timber growing. In this, however, Texas has done no differently than any other state in the South, North or East. It is gratifying to note that the situation is today undergoing a marked change. The growing depletion of timber supplies throughout the nation, together with the present agricultural situation, and the realization on the part of practically all people that proper land utilization must be given more careful consideration, all these are creating more interest in the future of our timber resources. The first definite steps on the part of Texas lumber companies have been taken to perpetuate the source of their raw materials. Many of them are now cooperating in a financial way with the Texas Forest Service in fire protection, and four companies have begun experimental planting.

It was back in 1915 that Texas recognized its responsibility toward forest perpetuation and initiated state forestry activities. The legislature enacted a law authorizing the Board of Directors of the Agricultural and Mechanical College of Texas to appoint a State Forester, who under the general supervision of the Board should have direction of all forest interests and all matters pertaining to forestry within the jurisdiction of the State. With this law as the basis the Texas Forest Service has developed. Increased appropriations have been received from each legislature since the fundamental law was passed. The organization has become one of the four major divisions of the Agricultural and Mechanical College, devoting its entire time to developing forest fire protection, forest education other than at the College, cooperative assistance to all forest owners, and forest research work. It was early found that the bulk of the cut-over lands would reforest naturally if protected from fire. Hence, forest fire prevention and suppression have received major attention. As appropriations, experience and field personnel increased, the area of land annually burned over has been reduced. During the past six years the area burned within the country covered by organized protection has not exceeded five per cent annually. This record is looked upon with pride in view of the fact that available funds for fire prevention and suppression work have never been more than one-sixth of the total considered necessary to give adequate protection. Within the past two years various protection units have been organized, with the principal land owners contributing one-half of the expenses. This system is being expanded as rapidly as possible, with the ultimate object of including practically all of the timberland owners of East Texas. The manner in which various owners and agencies are going into this protection unit work is indicative of the change that is taking place in the minds of Texas timberland owners.

Some states own large areas of forest land that are

THE SITE OF A PROPOSED STATE FOREST PARK IN EAST TEXAS

Steps are being taken to preserve such virgin longleaf timber in parks. Texas has four state forests

administered as state forests, with timber production and public recreation as the principal objectives. The policy in Texas is to acquire state forest land primarily for research and demonstration work in the various timber types. At the present time Texas has four such state forests, the largest of which includes two thousand three hundred and sixty acres and the smallest six hundred acres.

Two forests in Newton and Montgomery Counties are now under administration, with resident superintendents, and detailed forest research is under way. State forest nurseries are also located on these two forests. These nurseries are capable of producing about one million trees annually. The trees produced are used for experimental planting on state forests, for sale at cost to Texas land owners desiring to reforest idle land, and for ornamental use at State institutions.

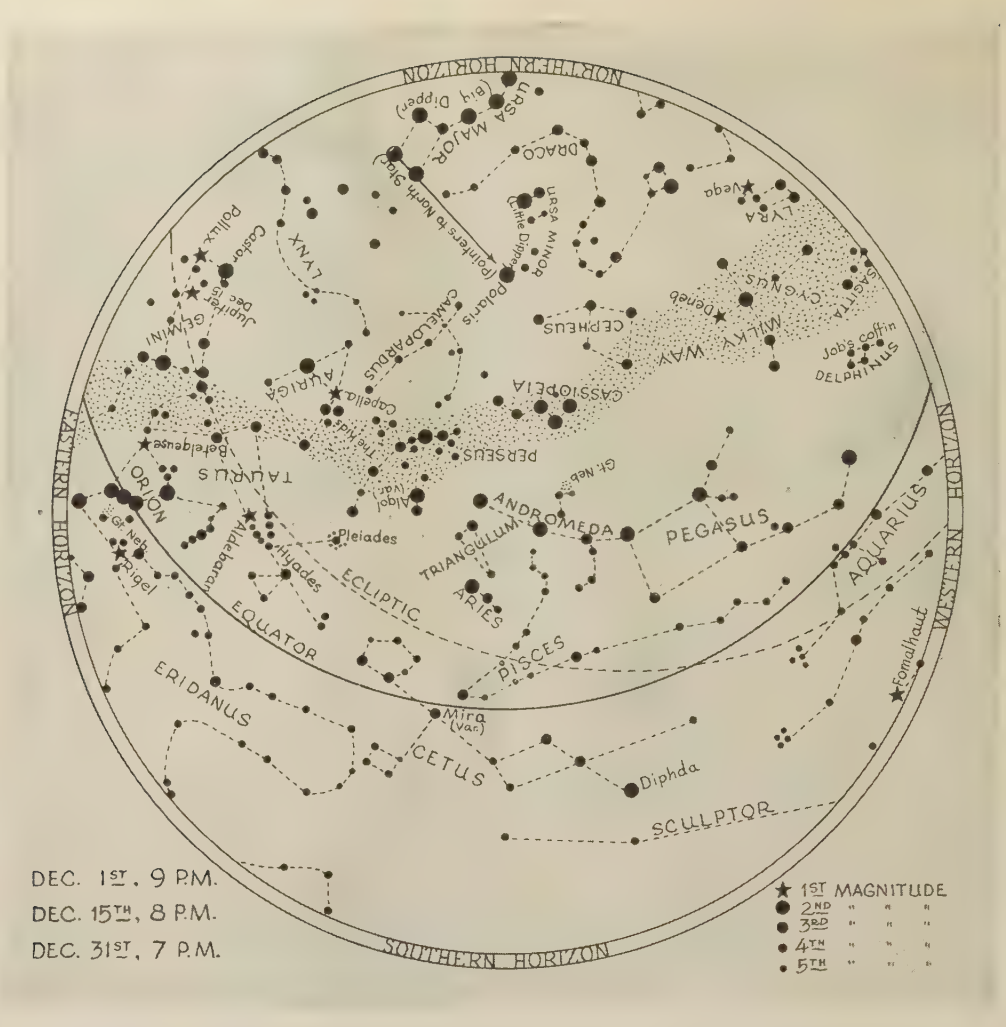
So much for the commercial timber belt. What of the post oak regions and the cedar brakes, and the mesquite and Rocky Mountain forests? Next to the East Texas piney woods, the cedar brakes of central Texas are most important from a commercial standpoint. In years past they have produced lumber, poles, piling, fence posts, shingles and firewood. Today practically all of the larger trees are gone, but a considerable business is still carried on in fence posts and poles that the region still produces.

Largest of all our timbered areas, but of relatively small value commercially, is the post oak timber found in the belt that extends southward from Red River, just west of the "piney woods," almost to the Rio Grande. This scrubby, slow-moving timber is used for firewood and fence posts. Only occasionally does it become large enough for sawtimber or cross ties. The Eastern and Western Cross-Timbers are smaller areas of post oak, mixed with some cedar and other low grade oaks. The Eastern Cross-Timbers is separated from the Post Oak belt by the black lands, a deep, fertile soil area on which very few trees grow naturally. Western Cross-Timbers is separated from Eastern Cross-Timbers by the Grand Prairie region, which, like the Black Lands, is practically devoid of trees.

Westward from the last of the above mentioned timber belts to the New Mexico line and from the Red River to the Rio Grande and thence eastward along the Rio Grande almost to the Gulf, is a large area of alternate prairie and mesquite forest. The mesquite grows largest in the central and southern parts of the state. It has spread over most of its present range during the past twenty-five years, or, in other words, within that period during which the cow range has been settled and fenced, thus preventing the great prairie fires that once swept large areas of the open country. Mesquite is used for fence posts, and, to a limited extent, due to its extreme hardness, for furniture and paving blocks. Live oak is found scattered throughout this region and huisache is common south of San Antonio.

In the Panhandle and South Plains region there are very few native trees except in the narrow valleys of running streams. Chaparral, shin oak and small mesquite are found from San Angelo west to the Pecos River.

Yes, Texas has forests, a wide variety—commercial forests covering areas larger than several of the smaller states, forests of less important trees covering even larger areas. Texas has sufficient forest land, capable of producing high quality timber, to take care of the needs of the entire state if good forestry practice is followed. Best of all, Texas is awakening to the opportunities that these forests hold for her. The tide is turning, and it is a safe prediction that the future will find Texas producing more forest products than at present, and at the same time, supporting larger populations in the commercial timber belt than the wildest dreamer of the future foresees.



To use this map hold it before you in a vertical position and turn it until the direction of the compass that you wish to face is at the bottom. Then below the center of the map, which corresponds to the point overhead, will be seen the constellation visible in that part of the heavens. It will not be necessary to turn the map if the direction faced is south

WINTER ATTRACTIONS IN THE SKIES

THE CELESTIAL STAGE IS SET FOR A BRILLIANT SEASON

BY ISABEL M. LEWIS

IN THE eastern sky this month will be found some of the finest constellations in the heavens. The winter evening skies far surpass those of spring and summer in splendor. Orion, the mighty sky-warrior, is now well above the southeastern horizon facing Taurus, the Bull, with uplifted club as the animal charges down upon him with lowered head. The bright red star, Aldebaran, marks the eye of the Bull. It is the brilliant star in the V-shaped group of the Hyades. This and its sister-group, the Pleiades, are two of the most beautiful and noted star-groups in the heavens.

A fairly good eye will see six stars in the Pleiades in the shape of a little dipper but it has been said that a few observers with exceptional eye-sight under exceptionally clear skies have seen as many as eleven of the Pleiades with the naked eye. With a good opera glass one may see as many as one hundred stars in this fine cluster. The brightest star in the Pleiades is known as Alcyone, which is fully two hundred times more brilliant than our own sun. The entire group is surrounded by a nebulous haze reflecting the light of the bright stars in its midst. The Pleiades are so far from the earth that the light from the stars in the cluster take about three centuries to reach us. The constellation lies on the neck of Taurus like a swarm of bees, and the Hyades lie on the forehead with the tips of the horns about midway between Orion and Auriga. The brilliant white star, Beta Tauri, the more northerly of (Continued on page 387)

THE LAST FRONTIER

(Continued from page 370)

without a shut-down. Over eight million dollars in silver was shipped out of this rich district between 1882 and 1917.

With the coming of the Orient railroad, and the stringing of high power lines, the future of the district is very promising. It has fought every hardship and vicissitude and has successfully operated with the handicap of a sixty-mile haul for fuel and supplies over mountain roads that would break the heart of the average prospector.

A little more than twenty tortuous miles south of Shafter lies the end of the road. Here is Presidio, ancient in its location, bloody in its history, but now a thriving border town. Most of its troubles are behind; ahead is everything. The arrival of the Orient railroad will change the "last frontier of Texas" from solely a tourist attraction.

The railroad will bring many things to the Big Bend. It will open up the tremendous mining industries now long dormant in Chihuahua and in Texas; it will bring colonists to turn the barren silt flats into a paradise of intensive farming, for there is an abundance of water if it can be pumped up. Smelters will come with the cheap power that could be derived from the gorges of the Rio Grande, for it would be more economical to smelt the local ores from Chihuahua and Texas here than to ship them three-hundred miles to El Paso. All this has been a dream; but the railroad will make it possible. The Big Bend country, in its stride, will astonish the nation.

The Texas rangers, in the last analysis, are responsible for making the Bloody Bend into the Big Bend of today. Swift, quiet, efficient, and above all, fair, they are the friends of the American and the Mexican alike. They have upheld the law without regard to creed or color, without technicalities, and have administered quick justice when necessary ever since they first broke up the bloody bands of smugglers, cattle thieves and bad men that made the Big Bend reek with horrors.

They are still here, these rangers; three of them in the Big Bend now—three men in a territory of nearly thirty-five hundred square miles. They represent the law outside the established towns. They know the country. They are on the move most of the time, on horseback with a pack mule, in an automobile with camping equipment, or afoot.

And when evening comes in the Big Bend, and you make your camp in the desert flats or on the high mesas a hundred miles from civilization; when the sun has burned down to the rugged peaks of the Chinita mountains, and the last light of the sunset is painting the turreted battlements of the great Carmen range to the east in all the vivid tints of the rainbow; when the ebbing day turns the old Rio's waters from their muddy yellow to molten gold; when the purple shadows of the night come creeping over the Big Bend—you can bank your fire in peace and roll in. You are safer here than you would be at home in your own house in the city, for the rangers have tamed the Bloody Bend with its history of strife and struggle, and today it is probably the most law-abiding—and among the most picturesque—of the territories in these United States.

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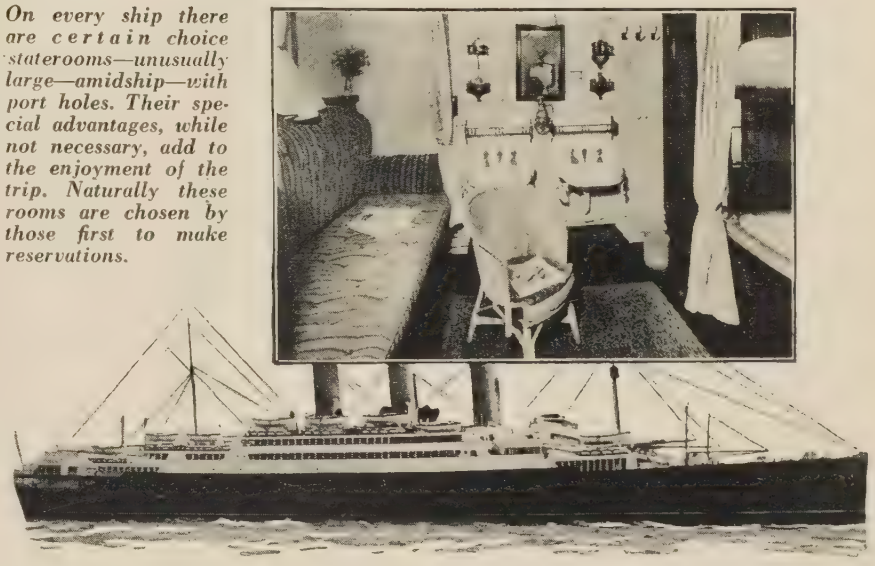

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LONGHORN, LASSO AND LATIGO

(Continued from page 374)

tions of the West now calmed and peaceful.

Stretching westward to the upper reaches of the Nueces, through the Devils River region, and on to the lower waters of the Pecos there is a great country once grazed by cattle and horses, but now in part by sheep. The Trans-Pecos, from the Big Bend to the Guadalupes, rock-bound, mountainous, and dry, covered with nutritious grama grasses, is a vast pasture land that will always be ranged by meat-producing animals.

Bounding this region on the east is the sinuous and salty Pecos, twisting and bending in endless convulsions through three hundred miles of Texas rock, alkali and sand, draining a great scope of country that must long remain, by geological decree, a land of cattle and of horses. Its valley, strongly impregnated with salt and gypsum, is matted with bluish brakes of salt cedar, which, laden with dew, switch the rider in the face with stinging brine to chap and crack the skin.

In "the heart of Texas", the region lying west of Austin and Waco, between San Angelo and San Antonio, is the scenic hill country. Once its cedar and oak-covered hills were full of cattle, but, being a land for browsing, it is now the center of the sheep and goat business of the state. Around the heads of the Concho there are many cattle, too, though San Angelo lays claim to the title of the "largest mohair market of the world." From the Monahans Sand Hills and the southern limits of the Staked Plains, north to the Panhandle of Oklahoma, most of the land is still, as the cowboys say, "best side up."

The Staked Plains, constituting a great plateau, are among the distinctive features of Texas topography. Out of them the Concho, Colorado, Brazos, and Red River take their sources. They are bounded on the eastern edges by a ragged cap rock or escarpment, ranging from a hundred to several hundred feet in height, breaking away into gullies and canyons and rough country known as the "breaks." The breaks are the home of the Matadors, the last of the foreign companies that launched into the business in the early eighties, the Spurs, the Pitchforks, and a score of other famous brands.

It was upon the High Plains that the XIT, or Capitol Syndicate, perhaps the largest fenced range that the world has ever seen, came into existence in the eighties when the state traded three million acres of land, in the western Panhandle, to a Chicago syndicate for the present state capitol. This land, in one block over two hundred miles long, was enclosed and subdivided into pastures with one thousand five hundred miles of barbed wire fence. It was watered with over six hundred windmills, and stocked with some one hundred and fifty thousand head of cattle. Every year its herds of steers were trailed a thousand miles to another great XIT range in Montana. Now the Capitol Lands are cut into hundreds of farms and small ranches.

But the first, and still the most representative, of the Plains ranches is the JA, founded in 1876 by one of the great characters of the West—Charles Goodnight. He located in the Palo Duro Canyon, the gorge that splits its scenic way through the level plains, and out of which Red River finds its course, and pushed out his ranges in the breaks and upon the Plains until they embraced nearly a million acres, and almost a hundred thousand cattle. There he preserved from extinction the buffalo of the Southern Plains, and, through years of patient experimentation, crossed them with Polled Angus cattle to produce the first herd of cattalo. The JA's yet graze almost four hundred thousand acres of grassy lands; its cowboys still ride herd upon from twenty-five thousand to thirty thousand head of JA Hereford cattle.

Though generally wide have been the encroachments of the agricultural frontier, wide still spread the ranges of Texas grass. For many years to come each fall will see again the gathering of beef and the loading of long trains of cattle. Each winter will find many cowboys wondering where "their summer wages have gone." But each spring's new grass will see remudas gathered into the horse pastures, chuck wagons loaded, and round-ups begun. Thousands of cowboys will again be riding the one hundred and twenty million acres of Texas grass, for it is still a land of beef.

TEXAS FEATHERS

(Continued from page 355)

or maybe in a fork, he carelessly piles twiglets, weed stems or heads, and grass. A few wads of cotton, or of wild-plant down line the nest, and rag strings, wrapping cord ends, and paper or leaves dangle untidily from it. Leading out from several Texas cities are miles of treeless or nearly treeless prairie. Bugs and water are plentiful on them; and doves, mockingbirds and bee martins have not overlooked their advantages. But of the birds who have found compensation for the lack of lofty vegetation, scissortails are in the majority. Dozens of their nests are flattened against the crossarms of uncreosoted telegraph and telephone line poles. What further home-sweet-home requisites Nature has failed to provide are in fullest measure tossed from passing trains and automobiles.

The cactus wren, last of a most noticeable trio, is so large, and so little of the general pattern of his kind, that he is seldom recognized, except by the initiate. Around San Antonio he packs his straw bundles down between divergent "leaves" of giant prickly pears. Further west, where growths of all kinds are sparse and widely spaced, he lodges the ricks among the thorny tips of dwarfed mesquite bushes. But, in either situation, they are so firmly wedged that the most violent northers do not harm them. It is really his wife who builds the nursery nest. But while she sits he busies himself with other homes, in the manner of the marsh wrens of the coast. For he, like them, foregathers where in winter the land is devoid of natural shelter. So, like them, he provides against bleak days to come, for both himself and the young family that will not know how, or have the time, to build for themselves.

MAMMALS OF THE LONE-STAR STATE

(Continued from page 365)

us back into distant ages when those with a feeble mental and dental equipment needed some external armor plate to survive.

The collared peccary, havaline, or little musk hog, of Mexico, once ranged in great numbers over half of Texas, but now it clings precariously to a few caves and cactus patches along the sides of the Pecos and Rio Grande canyons, and unless someone champions its cause, it will soon be gone forever. The only native wild hog of America, it has a peculiar interest if no great economic value.

The small-animal life of Texas is the richest, most varied, interesting, and least known of the faunal groups of the state, but its members are too numerous to warrant mention of half of the different kinds. Muskrats and beavers are still found in some of the streams. Wood rats and cotton rats should be understood so that any overabundance can be controlled and serious losses avoided. Pocket gophers of great variety and numerous kinds must be reckoned with in all cultivated land, or serious losses are sure to ensue; and ground squirrels of several species do more or less mischief at times. The big fox squirrels and gray squirrels of the timbered country are valuable and much prized small game and of even greater value for city parks and private grounds.

The western part of Texas has many of the kangaroo rats and pocket mice, strange desert animals of burrowing and nocturnal habits, provided with capacious pockets for gathering seeds to be stored for food, and some with very long hind legs and long tails for rapid leaping flight.

The bats of Texas are of many kinds and include vast numbers of individuals, but all belong to our northern insect-eating families. None of the fruit-eating bats and blood-sucking vampires of the tropics reach the Texas border.

While much fiction has been entangled with our bats, and most that is written about them is not true, there is enough of the truth known to be stranger than any fiction. Many bats live in caves, some for the winter period of hibernation only, and others, especially in the mild climate of Texas, the whole year around. There are many caves in the state and some of these are favorite resorts of large numbers of bats. In one cave 19 miles north of San Antonio that I visited in 1926 there were thousands, perhaps millions of the free-tailed bats, hanging from the roof far above my head, and the floor was piled deep with their little dry pellets of guano. For twenty nine years an average of sixty tons of guano had been taken from this cave and shipped for fertilizer, at a price of $30 to $75 a ton. To the owners of the cave it was a veritable inexhaustible gold mine perennial, and to the biologist it offered an instance of insect destruction of astonishing proportions. Approximately six hundred tons of live insects had been devoured annually by this one colony of bats in a limited area, possibly within a radius of five or six miles around the cave. The question arises—what would have happened if these insects had been left to feed, breed and multiply at will?

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WINTER ATTRACTIONS IN THE SKIES

(Continued from page 384)

the two stars that mark the tips of the horns of Taurus, lies in one corner of a pentagon formed with this star and four bright stars in Auriga. Capella, in Auriga, is one of the most brilliant and beautiful stars in the northern hemisphere and it will be visible throughout the winter and far into the spring. It can be recognized with the aid of the little group of three stars close to it on the southwest. The name Capella means "She-Goat" and the three little stars near by are the Kids.

The brilliant, bluish-white star in the southwest corner at the constellation of Orion is Rigel, a super-giant star so distant that its light takes six and a half centuries to reach the earth. Betelgeuze, the red variable star diagonally opposite to Rigel is another giant star that is nearer to us, only one hundred and ninety light years distant. This star has a diameter of about 260 million miles and if it were at the center of the solar system would extend far beyond the earth. If possible, one should try to view through a telescope the magnificent nebula in Orion known as the Great Nebula. It is centered around the sextuple star, Theta, in the Sword of Orion.

In the constellation of Gemini, which may now be seen in the east, lies that newly discovered member of the solar system now generally known as Pluto. This planet, for such it is now known to be beyond a doubt, is about as large in size as our own planet, Earth, and about forty times more distant from the sun, or over three billion five hundred million miles away.

Saturn is also visible in the evening sky this month in Sagittarius, but it is low in the southwest and sets about an hour and a half after the sun.

Venus is now in the morning sky and reaches its greatest brilliancy on the twenty-eighth. On the fifteenth it rises nearly three hours before the sun and is a beautiful Morning Star in the southeast.

Mars enters Leo about the middle of December, and then rises in the northeast about 8:30 p. m. It is visible all night. It is now the brightest stellar object in view, next to Sirius and Jupiter, in the evening sky.

Mercury is at its greatest distance east of the sun on the twentieth and may possibly be seen for a few days before and after this date, low in the southwest. It is in conjunction with Saturn the evening of the fourteenth, passing about 2½° south of Saturn.

The shortest day of the year, when the sun will reach its greatest distance south of the equator, will be December 22. At 8:40 a. m. on that date, E. S. T., winter will commence and the sun will begin its northward journey once more.

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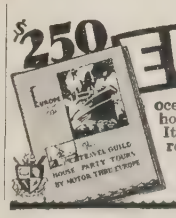

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LAND OF THE GOLDEN FRUIT

(Continued from page 362)

armed with stout claws from which it earns its name. The blossoms really are like little balls of fuzz. They are a great favorite of bees, and catsclaw honey is a great delicacy.

When the coralillo, *Erythrina herbacea,* or coral bean sheds its gorgeous, long flame-colored blossoms it does not mean the end of color for this plant because its seeds are unparalleled for brilliance. The plant drops all of its leaves in March before blooming, oddly enough, and the places of the blossoms are taken by ebony black pods which are silver gray on the inside and open wide like a door, displaying two rows of seeds appearing like little coral kegs. The beans are displayed in this manner for a long time. They are favorite bead material for the Mexicans, and the Indians are said to have used them to play a game called patol.

The Mexicans have a superstition about the frijolillo, *Sophora secundifolia,* miscalled the mountain laurel. They say that if a maiden inhales the heavy perfume of the flowers held in the hands of a man that she will fall in his power. To inhale the perfume sometimes causes headache or nausea.

Peculiar properties are attributed to the fruit of the coyotillo, *Earwinskia humboldtiana,* which is a shrub or small tree. Paralysis is said to be caused when the fruit is swallowed. The plant is reputed to be called coyotillo because the coyote has sense enough not to eat it.

Two trees well known elsewhere are given peculiar properties in the Valley. The hackberry, called *palo blanco,* white wood, by the Mexicans, gives off a fine cooling mist even on the hottest of days. Then the ash, *fresno* in the Spanish tongue, which grows in this section is virtually evergreen, a fact which is not generally known, even in the Valley.

There is scarcely a more persistently blooming, brilliantly colored shrub than the lantana, *Lantana horrida.* This tree begins to bloom in the early spring and continues intermittently until fall. It is a favorite for transplanting in yards and for bouquets. It is called *yerba de Cristo,* or herb of Christ, by the Mexicans because of the medicinal qualities of the tea brewed from its leaves and roots.

The Valley also has a charming species of lily, *Castalia elegans,* which may be found along the road in many places. Its large, white blossoms cannot but catch the eye as one passes. The blossoms are at the end of long stems protruding from the water but the leaves lie flat on the surface.

To be so retiring in disposition, the night-blooming cactus, *Acanthocereus pentagonus,* native to the Valley and Northern Mexico, has one of the most attractive blossoms of any plant in this section. This cactus, which raises its ribbed, spiny stems in a limited area in the Valley, does not open its blossoms until after nightfall. When the buds begin to swell in the late afternoon one can prepare to witness one of Nature's wonders that night.

One of the outstanding contributions of the Rio Grande to the Valley has been the native palm, *Sabal mexicana.* The famous Rabb palm grove, considered to be the largest native palm grove in the United States, and a showplace, is made up of this species.

All of the usual characteristics of the jay family, including the inclination to rob birds' nests and to be eternally quarreling, are retained by the green-plumed *Xanthoura luxuousa glaucescens* which is found in the Valley. This bird is nearly a foot long. His upper parts are blue-green, the crown of his head and hind-neck are a deep, rich blue, his forehead almost white, and chin, throat and chest and eye region black. The shoulders, rump and upper tail feathers are yellowish green, the four middle tail feathers being a darker, brighter green and the outer ones yellow. The abdomen is yellow.

The Valley is as far North as the chachalaca, a gallinaceous bird ranging from northern South America through Mexico, comes. One of the peculiarities of this bird is that no matter how tame the young may become—and they sometimes become so friendly that they are a nuisance—they revert to their wild state when they reach maturity.

The chachalacas have long tails and their plumage is dark olive, brightening to lustrous green on the tail. They build nests in shrubs near water and usually two out of three eggs produce females. The nests are small for the size of the bird. The chachalaca has a peculiar throat formation, the trachea forming a loop, and swallowing causes a large lump to appear.

Wild life has been well preserved in the Lower Valley of the Rio Grande due to the fact that it is the last frontier of the nation and the ruthless hand of man has been late in coming and destroying. Only during recent years has settlement in the new country gained impetus, but so extensive has it become that there is danger that many rare forms of natural life may be destroyed even before properly described and classified for science and posterity. Several large havens are likely to remain unharmed for some time, however. One is the Rabb palm grove, and others are two islands off the coast in the Gulf of Mexico which offer safety to millions of sea birds under protection of the government. A tendency to provide parks and sanctuaries may, however, give protection to the wild life before it is too late.

One is adventuring when he explores the Nature of the sliver of the Southland which Texas possesses. So much remains to be done in the way of classification and research work that the Valley is one of the most alluring fields left for the naturalist to explore in this country. It has the lure of the tropics, the tang of the seashore, and the touch of the desert in its plant life and fauna; it is a meeting place for all the types of life belonging to the Southwest, types which the old Rio Grande, laboring through the centuries, brought over the long miles to plant in a garden it can call its own.

THE FRONTISPIECE OF THE LONGHORN STEER

In the past we have had frequent requests from individuals desiring to purchase the originals of colored frontispieces from Nature Magazine. We have maintained a policy, however, in view of the value of these originals, of retaining them as our own property.

It has been suggested, however, that the painting of the Longhorn Steer, by R. Bruce Horsfall, should constitute an exception to this rule on the ground that an individual or organization might wish to preserve it for its historic value. The original is in water color and twenty inches by thirty inches. The American Nature Association will entertain any reasonable offer for this picture.

SAURIANS OF THE SOUTHWEST

(Continued from page 359)

one appendage which has undergone a variety of modifications. The short, stubby tail of the Gila monster is used as a storehouse for excess energy when food is plentiful, at which time it becomes fat and round. The chuckwalla uses his muscular tail as a weapon of defense. The whiptail lizard is a slender species with a long, gradually tapering caudal extremity nearly three times the length of the body. Carrying the tail curled up over the back is a distinctive habit displayed by the gridiron-tailed lizard. A tail can be expressive, for this animal, prior to seeking refuge in a hole or bush, brandishes the black-and-white banded tail in a manner which seems to mean, "Just try to catch me." What is the real value of this habit remains to be found out.

Natives of the Southwest as well as the majority of residents are acquainted with that odd-looking reptile, the horned lizard, better known by the incorrect name, "horned toad." Strictly terrestrial, the creature is a prolific inhabitant of the mesas, deserts, and valleys. Most of these horny creatures, and there are a number of species, are insectivorous, feeding largely upon ants.

Much misinformation is current concerning the Gila monster. This saurian, the largest in the United States, is our only native poisonous lizard, and together with the Mexican species known as "Escorpión" constitutes the only poisonous genus known.

Concerning the poisonous qualities of this formidable lizard this much should be known: The Gila monster has a gland which supplies poison to a series of venom-conducting teeth or fangs in the lower jaw. The death-dealing apparatus is unlike that of the rattlesnake, for instance, which consists of two movable, needle-like hollow fangs situated in the upper jaw. Being unable to strike as can snakes, these lizards seldom have the opportunity of biting people. They are more agile than they appear to be when observed in captivity, as they quickly develop a lazy, docile disposition under these unnatural conditions. In a wild state they turn and snap with the speed and ferocity of an angry dog. With all these dangerous qualities there still is room for exaggeration. Stories are told of Gila monsters having a breath so strong as to turn grass brown within a radius of six feet; of Gila monster migrations in which thousands participated, and countless other yarns, many doubtless originating in the minds of old "desert rats," those gentlemen of the open spaces enjoying a chance to overawe the unsophisticated tourist.

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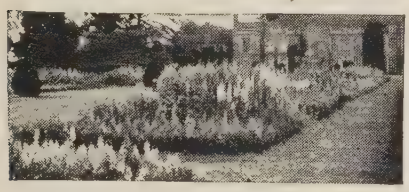
GARDENS AT SUTTON PLACE, ENGLAND



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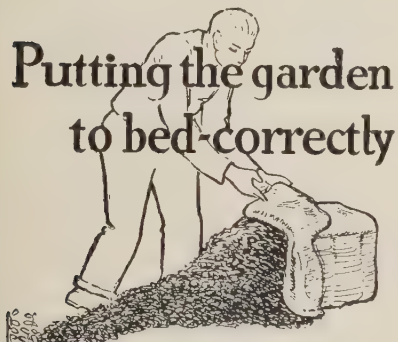

EVERY garden should be "put to bed" for the winter—tucked in just as carefully as if it were a child. For winter will often *kill* your perennials and shrubs if you do not take proper care of them.

We do not mean to say that any kind of a blanket or covering will keep plants *warm*. That is not the purpose of a winter mulch. It is used to prevent soil heaving caused by the alternate freezing and thawing that occurs in late Fall and early Spring, which breaks off the feeder roots.

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WHERE THE FLOWER LEGIONS PARADE

(Continued from page 350)

Corydalis, yellow Texas star, golden squaw-weed, spiderwort, day flower, and a host of companions soon follow with their matchless variegation of purple, red, yellow, pink and blue.

The season's height is marked by a riot of color. *Coreopsis*, both real and false, in most marvelous mixtures of richest brown and gold; cone-flowers of a dozen sorts; beard tongues; Salvias; Indian paint brushes; flaming red and gold firewheels; blue-bonnets; purple horsemint and thistle; *Verbena*; false dandelion (few real dandelions occur in Texas, due perhaps to the long hot summer); white, pink and yellow evening primroses in variety by the dozen—and so on.

The oak-hickory forest ramifies sinuously over much of the eastern half of the state, wherever suitable conditions of soil sandiness offer. Midget mustards, bluets, Micranthes, spring beauty, and violets usher in spring even before winter has taken his departure. Slightly later hawthorn fills the air with fragrance and the landscape with snowy beauty. Wild plum, redbud, and holly are scattered less abundantly throughout most of the area.

Midspring finds *Coreopsis*, firewheel, cone-flowers, yellow, blue and white asters, pink and yellow horsemints, Nuttall's chickweed; goat's rue, pink Texas star, *Phlox* galore, including the beautiful one which Drummond carried to Europe a century ago and which, since, in the gardens of the world has given rise to endless variety; tree huckleberry, scarlet *Castilleja*, orange butterfly weed and legion others, in bewildering mixture and mosaic, covering sunny open spaces or shade spots everywhere with a colorful carpet.

Summer and fall work a change in the color scheme and personnel. Goldenrod; asters, blue and white, with abundant yellow relatives; sunflowers; rose-colored Gerardias; pink and blue wild morning-glories; ground cherries; heliotrope; French mulberry in purple fruit; fragrant *Eupatorium*; golden partridge pea—all these bloom till frost. Gold is the dominant of the color scheme, "fally fragrance" the perfume.

The southern pine forest, affectionately known to Texans as "the piney woods," extends into the eastern part of the state from Louisiana and eastward. Here it mixes in mosaic with a conglomerate of oaks, hickories, beech, birch, maple, linden, sweetgum and other hardwoods which enter the state from the north and east by way of

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suitable for Spring planting will be appreciated by your gardening friends. Let me send them a neat holiday box, containing the following rare bulbs: 6 gorgeous Tigridias (Shell Lily), 6 beautiful Gladiolus, 6 Hybrid Montbretias, 6 lovely Japanese Lilies, 6 Zephyranthes Rosea, (Fairy Lily), 6 Tuberous-rooted Begonias, 6 Zephyranthes Candida (Summer Crocus), 6 Golden yellow Calla Lilies. 60 strong flowering size bulbs, a joy and lasting remembrance, sent postpaid to any address in U. S., together with card bearing your name for $9.75. Half size collection $4.75, postpaid. Catalog.

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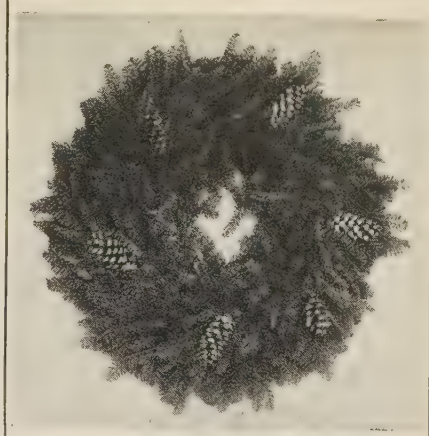


Real Balsam Wreaths

You can give no more delightful Christmas gift than one of our hand-made fragrant Balsam Wreaths from the Green Mountains. We use all natural decorations.

No. 1. 12-inch wreath of five cones and five sprays of berries..... .....**$1.00 each.**

No. 2. 15-inch wreath with six small sprays and six sprays of berries.....**$1.50 each.**

No. 3. 20-inch wreath with five large cones and five sprays of berries.....**$2.50 each.**

No. 4. 20-inch wreath with continuous decoration of cones and berries. More elaborate than No. 3.....**$3.50 each.**

No. 5. A large 26-inch wreath built on frame for store or cemetery use, decorated with many cones and berries.....**$7.00 each.**

No. 6. Our largest wreath, 30 inches in diameter and lavishly decorated.....**$10.00 each.**

Special Christmas Boxes

These boxes contain sprays of assorted Evergreens and red Winterberries. Also a bag of assorted cones, just what your friends would like for decorating their homes or church or school.

Box No. 1. Fifty assorted Sprays and a bag of Cones....**$2.75 each.**

Box No. 2. One hundred assorted Sprays.....**$5.00 each.**

Box No. 3. Two hundred and fifty assorted Sprays.....**$10.00 each.**

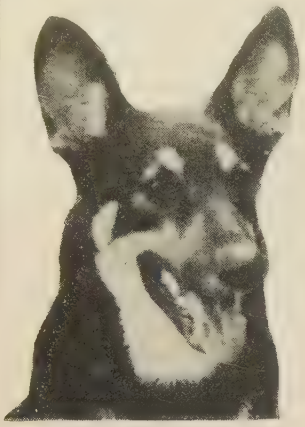
Please send for our complete Christmas Price List

It will interest you.

GEORGE D. AIKEN

Box Z — **Putney, Vermont**

Buy yourself or your friends the best pal money can buy



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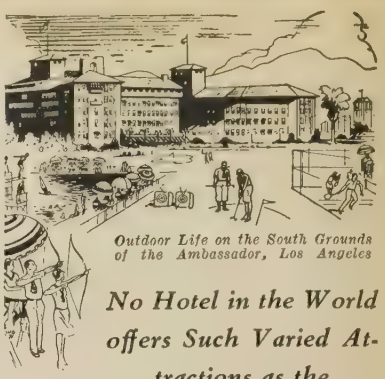
Arkansas and northern Louisiana. In the varying shade of this mixed forest, favored with an abundance of moisture are found a great many beautiful flowering shrubs and small trees which are much better known northward or eastward than to the remainder of Texas. Flowering dogwood, fringe tree, *Vaccinium*, several azaleas, together with *Styrax, Mohrodendron,* and the large flowered magnolia occur in varying abundance, depending upon local conditions. Herbaceous vegetation is equally familiar eastward, unfamiliar to the rest of Texas. Orchids, yellow, rose and white; yellow-eyed-grass, *Hypoxis, Iris,* pitcher plants; sun-dews, blue lobelias, wistaria, twin-berry; red honeysuckle, mandrake,—all here reach their southwestern limit of distribution.

Near the coast the land becomes more and more level, making for poor drainage. Creeks and sloughs, marshes and lakes abound. River bottoms become cypress or tupelo swamps, or wide stretches of tule, giant reed and cat-tail. Canals and bayous become choked by the beautiful, but, to the local layman, baneful water hyacinth. Water lilies—beautiful *Castalia, Nymphaea* and the giant *Nelumbo*—fill lakes of suitable depth and situation. Bladderworts, yellow and blue, each with its own especial float device, ride the water surface on lacy leaves.

While accurate description, even at the hands of those skilled to use words most effectively, can never approach personal sensing contact with any great work of art or music, and while the present attempt falls far short of such emanation, it has yet been undertaken in the hope that a generous use of vivid imagination, fortified by familiarity with similar though, perforce, less splendid scenes in other regions, will enable the reader to gain some vague idea of the splendor of a Texas landscape in spring—a picture to which trilling harmony welling from a thousand feathered throats and subtle pervasive perfume blended from myriad chalices contribute scarcely less than the indescribable hue and pattern of Nature's color scheme.



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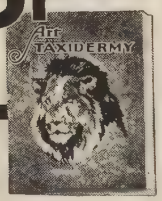

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PARADISE OF ANGLERS

(Continued from page 380)

Black bass, crappie, bream, channel catfish, perch and sunfish are produced at the state hatcheries by the hundreds of thousands each year, and with improved methods of hatching and distribution now in process of development, the output will be many times as great.

Primeval Texas had few lakes. Within recent years many irrigation and municipal reservoir dams have been constructed, impounding large areas of water and providing splendid sport for fishermen. Some of these are the Medina Lake near San Antonio; Lake Worth near Fort Worth; Lake Kemp near Wichita Falls; Lake Cisco near Cisco. Caddo Lake, in Northeast Texas, is the largest of the natural lakes.

Texas has many rivers, including the Red River, the Sabine, the Neches, the Trinity, the San Jacinto, the Brazos, the Colorado, the Guadalupe, the San Antonio, the Nueces, the Rio Grande, and the confluents of the latter, the Pecos and the Devil's River, with many tributary smaller streams. All offer exceptional sport. In the larger rivers, fresh water catfish are caught in numbers, while in the upper reaches and in the lakes, black bass, crappie, bream, and sunfish delight the angler.

The romance, color and adventure in Texas commercial fisheries center about the red snapper, denizen of the deep. Fleets of sturdy schooners, most of them equipped with auxiliary oil or gas engines, sail regularly from Galveston or Port Arthur for the snapper "banks".

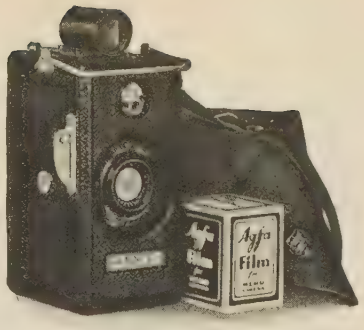
The snapper fishing grounds are located at varying distances from the shore, some as far as two hundred and fifty miles out, and in water from thirty-five to one hundred fathoms in depth. Veteran skippers of the snapper boats come to know the bottom of the gulf almost as well as the yards of their homes. By means of a sounding lead having a cavity filled with soap they test the bottom. If the soap shows sand or rock, the fishing lines go over.

Stout lines, each equipped with three strong hooks, and sinkers weighing a pound or two are cast overboard, and all hands, from the captain to the cook, take part. Fishing proceeds from dawn to dusk. As the glistening, red-tinted fish, ranging in weight from one to thirty-five pounds are hauled aboard, they are packed in ice, twenty tons of which can be stowed away amidships, in the holds of the schooners. With fair luck, fifteen to twenty thousand pounds of fish will be caught in ten or fifteen days.

Within the past decade, the shrimp industry has expanded to substantial proportions. Cocktails and salads, made of Texas shrimp, may now be had at metropolitan cities as far apart as New York and San Francisco.

Shrimp are caught in both the bays and in the gulf a short distance from shore. Although practically all of the bays are closed to fish seining, shrimping is forbidden in only part of them. Gulf seining for shrimp is limited by the weather. When the sea is calm, scores of small power launches may be seen dragging for shrimp from two to ten miles off shore. The production last year was around two million pounds.

Universally esteemed as bait for trout or



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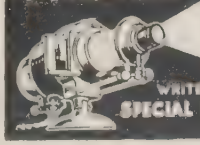

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FIGHT TUBERCULOSIS WITH CHRISTMAS SEALS

redfish, large quantities of shrimp are caught by bait dealers. At Galveston there is a picturesque spot on the waterfront, known as the "mosquito slip", a small-boat basin, where shrimp fishers cater to sport fishermen. At Corpus Christi the shrimpmen may be found near the bay front in the darkness that precedes dawn, each with his lantern and his basket of shrimp. Down in the Rio Grande Valley, where strings of jerked-beef hang on lines about the huts of peons, the Mexicans dry shrimp, hulling and eating them as if they were peanuts.

Texas should be one of the greatest oyster producing states in the union. Thousands of acres of bottom lands in the bays are suitable for oyster cultivation, and vast beds of oyster shells, where oysters have grown, flourished and died through countless ages, testify to the possibilities. These shells, known as mudshell, are converted into Portland cement, are used for road improvement, poultry feed, and other purposes. Two cement plants at Houston, using mudshell, have a capacity of over five thousand barrels daily, and it has been estimated that the supply of shell will last from three hundred to five hundred years.

Factors favorable to the oyster industry in Texas are: a product of delicious flavor and quality, excellent natural bottoms, climatic conditions which enable the oyster to spawn through several months of the year instead of a few brief weeks as in the North Atlantic region, and a rate of growth nearly twice that in northern waters.

Another important item in the fisheries of Texas is the blue crab, which thrives in extraordinary abundance and without protection of any kind. Fishermen may take as many crabs as they can catch, of any size and at any season of the year. Some states have a minimum size limit for crabs, and prohibit taking female crabs during the spawning term. Texas conservationists are now urging the need of similar restrictions.

An important change in the administration of Texas fisheries occurred in 1929 when the legislature abolished the office of game, fish and oyster commissioner, creating instead a commission composed of six members with overlapping terms. The affairs of the commission are in charge of an executive secretary, appointed by the commission. The average tenure of commissioners preceding this act was only about three years, and it is felt that under the new arrangement, Texas fisheries will secure the benefits accruing from stability and continuity of administration.

More Rhino Deer

"Old Horny", famous Yosemite deer who had protruding from the bridge of his nose a third horn which he shed each year along with his antlers, evidently left descendants, because two deer with the same peculiar characteristic have recently been seen on the floor of Yosemite Valley. "Old Horny" departed this earth last fall, and his skull was placed in the Yosemite Museum to be seen by thousands of visitors who did not know him when he was alive. Although there are hundreds of deer in the park, none attracted as much attention as this freak. Such growths as he and the recently discovered deer possess are very rare, scientists assert. Probably not more than one in a hundred thousand animals possess them.

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SINGLE ROOMS, with private bath . . . $6, $7 daily, American Plan, for One Person.

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If you stay for 7 days or over, we will make you a still further reduction—weekly rates to be 6 times the daily rates.

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With 250-Power Microscope

A complete slide-making outfit consisting of the well-known Bio-scope, magnifying up to 250 diameters, a complete set of fine dissecting instruments, permanent microscope slides all ready for use, blank slides and cover glasses, preserved plant and animal specimens for making your own slides, together with the necessary stains, chemicals, and reagents; and, in addition, a copy of "An Introduction to Slide Making," giving full but simple directions for making your own permanent slides. Supplied complete in a beautifully finished wood frame box, making an excellent gift.

Set, complete with microscope.....$27.50
Set, without microscope..... 10.00
Microscope, 250-power..... 20.00

BIO-SET JUNIOR

With 100-Power Microscope

This set is similar to the larger set, but is supplied with microscope magnifying 100 diameters. It is a complete slide-making outfit containing all the essentials for preparing an extensive collection of slides, including dissecting instruments, one permanent specimen ready for examination, blank slides and cover glasses, preserved plant and animal specimens, together with the necessary chemicals and reagents; and in addition, a copy of "An Introduction to Slide Making," giving full directions for preparing your own slides. Complete in finely finished wood frame box, making an excellent gift.

Set, complete with microscope.....$17.50
Set, without microscope 7.75
Microscope, 100-power..... 10.50

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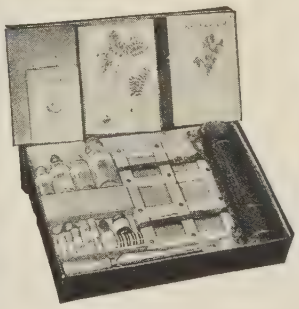

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Copy of the "Bio-Kit Handbook," collecting can and shoulder strap, combination pocket lens and compass, plant press, drying felts, corrugated ventilating boards, herbarium, pressed and mounted plant, herbarium glue, glue brush, glass mounting plate, gummed herbarium tape, pair of forceps, formaldehyde solution and denatured alcohol for preserving specimens, specimen bottles with corks, vials with corks, specimen boxes, trowel. Complete in large container.....$8.50

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Contains the following:
Copy of the "Bio-Kit Handbook," collecting bag with shoulder straps, combination pocket lens and compass, insect net with bamboo handle, killing jar, insect spreading board, Riker specimen mount, spread and mounted butterfly, insect pins, pair of forceps, formaldehyde solution and denatured alcohol for preserving specimens, specimen bottles with corks, vials with corks, trowel. Complete in large container $8.50

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THE TEXAN PART OF TEXAS

(Continued from page 346)

are today made up of Mexicans. The United States at large knows well enough what canned chili con carne is; in San Antonio and in hundreds of other places in Texas people eat chili con carne that is not canned, and along with it they eat enchiladas, tortillas, tamales, and frijoles con huevos, dishes not found in other states.

It is not a source of pride to most Texans —though many of them love traditions so much that they would subtract nothing— that their state once acquired the reputation of being the home of bad men. It is said that sheriffs all over the country used to find the letters G. T. T. scrawled on the doors of deserted houses. The symbols meant "Gone to Texas," and the sheriffs seldom followed. The proximity of Texas to Mexico, a thousand miles of twisting river separating the two, had much to do with its popularity among men wanted by the law. During the confused times following the Civil War, hunted men from far and near found a temporary refuge on the unsettled frontiers of the state. While the Texas Rangers were extirpating them, the legend of the Texas outlaw flowered. At the same time, the saga of the Ranger was born, and that forms one of the traditions in which Texans north and south, east and west, take pride and by which they are bound together.

Nothing has contributed more to the enormous aggrandizement of wealth in Texas during the last twenty years than oil. And wealth has come not only through the production of oil but through its refinement. The long coast line of the state affords a strategic position for oil refineries. Port cities like Port Arthur, Bay City, and Texas City have been made by oil. Pipe lines drain the black fluid down to these centers from fields hundreds of miles away, while fleets of tankers bring the crude product of fields in Mexico across the Gulf. Then at the very doors of the refineries ships load gasoline and the "101" other oil products to be distributed over the world.

Consciously or unconsciously, all lovers of Nature thank God for rocks and poor soil. What man cannot "develop" must remain natural. Soil "too poor to hatch lizard eggs" must remain unplowed and keep the savor of the wild. There are millions of acres in Texas that will always rejoice the hearts of Nature lovers. Above "the Magic Valley" exists a vast sweep of country against the Rio Grande which can never be developed beyond the stages of barbed wire and water wells—unless by oil. It affords a fine range for sheep, goats and cattle but primarily remains an open space as free as any in the United States in which people may ride. Down in the brush country between the Rio Grande and the Nueces River, the javelina, Mexican hog, or peccary, still eats prickly pear apples, the panther still hides, the coyote still slinks, and white-tailed deer still abound. It takes no prophet to predict that much of the brush will never be grubbed up.

After coursing south for half a thousand miles from its source high up in the Rocky Mountains of Colorado, the Rio Grande del Norte upon reaching the Texas line near El Paso veers southeast as if to shoot straight for the Gulf of Mexico. For three hundred miles—air-line measurement—it keeps this general course; then it turns sharply to cut northeast for more than a hundred miles before resuming its Gulfward trend. Within the great bow thus made—the arc by the Rio Grande, the string by the Southern Pacific Railroad—lies the Big Bend country of Texas. It is a land in which strange things, both geological and human, have happened. The mountains are wild and desolate; the vegetation bizarre. The Rio Grande here becomes the Santa Helena Canyon, two thousand feet in depth, only a little less picturesque than the Grand Canyon of the Colorado. There are few settlers. When out on the gallery of one of the solitary ranch houses or in a camp listening to the eerie baying of coyotes, one may easily imagine himself as far removed from the radio world as was Cabeza de Vaca when he wandered, first of all white men, across the wilds of the Lone Star State.

The rainfall on the Davis Mountains is generally greater than in the Big Bend and the wide valleys afford better grazing. The mountains offer a cool and wonderfully invigorating climate for summer that Texans themselves have not yet learned to appreciate. The fact that the human sharks who live off tourists have not exploited the region makes it all the more charming.

West of the Davis peaks and running

(Continued on page 395)

If YOU ARE ONE OF THE MILLIONS WHO READ ST. NICHOLAS IN YOUTH

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▼ If you were one of the millions who, in youth, read and loved St. Nicholas—
▼ if yours was one of the million homes where it was an eagerly welcomed
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THE TEXAN PART OF TEXAS

(Continued from page 393)

up into New Mexico is the Guadalupe Range. Guadalupe Peak, which rises 9,000 feet above sea level, is the highest point in Texas. This region is very arid and rough. Here the Apache Indians made their last stand, and here the only mountain sheep left in the state and a majority of those left in New Mexico are making their final fight.

The noted "hill country" of Texas lies north of San Antonio and west of Austin, centering around Kerr, Mason, and Kimble counties. The hills are too rough to till and they are covered with oak, sumach, Texas buckeye, Mexican persimmon, and other growth affording wonderful cover for game and at the same time supplying food. The glades and valleys provide rich pasturage. In this region the selling of hunting rights has become an important source of revenue for ranchmen; deer and turkeys are strictly protected; streams like the Llano, the San Saba and the Guadalupe are well stocked with fish. The scenery is delightful—and there is a world of it.

Space to describe the rivers of Texas is lacking, but while expressing thankfulness for rocks, one must remember the Palo Duro Canyon of the Panhandle—the head tributary of Red River. In some places it is ten miles across from lip to lip—a great swordcut across the plains floor, its walls and vegetation vari-colored, and the land both in and along it destined to remain unplowed.

A great deal of the post oak and piney woods soil of eastern Texas lacks the fertility necessary for easy cultivation. It should harbor much wild life but does not, though in places conservation—or rather, restoration—is making progress. The piney woods land runs down into bayou, lake, and swamp country. Caddo Lake, partly in Texas and partly in Louisiana, represents a whole region of softness, fragrance, lush vegetation, and languorous airs. The shadows of the great trees and the houses back in the shrubbery seem to say, "Oh, linger here." Nature all over Texas is saying the same thing.

Prevent Fires—It Pays

Forest fires injure not only the landowner, but the hotel-owner and storekeeper as well, and the slogan of the U. S. Forest Service, "Prevent Forest Fires—It Pays", is more than an idle statement. Figures compiled by Forester S. B. Show of the California region show that during a four-day period of brush and forest fires, hotel registration fell off 88% and other businesses suffered a 50% depression. Glacier National Park concessionaries suffered tremendously from the needless Half-Moon fire, which the Park Service managed to smother before it had done extensive damage within the park.

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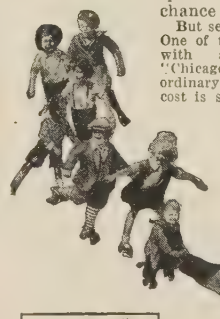

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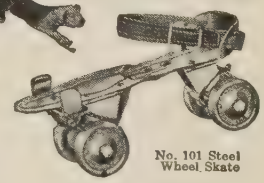

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TEXAS—GARDEN LAND

(Continued from page 377)

ing and its handsome leaves. Mexican persimmon—not to be confused with the edible-fruited persimmon—is valued for gray, satin-smooth bark as well as for evergreen foliage, while erythrina is sought for its heavy sprays of red pea-shaped flowers and for the slender pods that crack open and expose coral beans.

The red beans of mountain laurel, not the *Kalmia* of the East but a purple-flowered, heavy-scented evergreen Sophora, are filed and committed to the earth; left to germinate alone, they sometimes take years. Lantana, whether the yellow or the less common pink and lavender, never minds the heat. Besides providing the fragrant magnolia and the bee-attracting wild peach, or cherry laurel, woods of east Texas supply dogwood, sweet bay, trumpet vine, and an exquisite pale azalea. From the swamps "siene bean", *Daubentonia longifolia,* finds its way to yards and brightens them through the difficult months of July and August with pendant yellow clusters. Wild olive—in the pretty Mexican syllables, *anacahuita,* and in Latin, *Cordia boissierii;* esperanza, one of the forsythias, and desert willow, natives all, flower in gardens along the lower Rio Grande. Holly and yaupon, its small-leaved relative; *chilipitin,* a hot little pepper of which mockingbirds are fond and which before the days of drainage ditches and screens people swallowed to keep off malaria and still use for seasoning; coral berry, or Indian currant, *Symphoricarpos vulgaris,* which is bright all winter; French mulberry, *Callicarpa americana,* with purple fruit in fall, and sarsaparilla vine, of the moonseed family—these are native plants extensively cultivated for their decorative fruit.

Of course gardeners everywhere make use of native materials. The uncommonly general use in Texas of native shrubs and flowering trees is due both to their beauty and to the desirability of plants that resist drought and heat. The proportion of native growths to exotics is much greater in west Texas gardens than in those of rainy east Texas.

If it is not quite true, as Spinoza thought, that "all things excellent are as difficult as they are rare," certainly the difficult and the rare have an attraction that the easy and the common have not. So, while Texas gardeners value plants that drought will not kill nor heat wither, they aspire to those that require daily watering and an imported soil. They raise larkspur, stock, candytuft, poppies, four o'clocks, cosmos, petunias, nasturtiums, periwinkles, and—above all—heat-loving zinnias because these annuals, among others, are sure to bloom, some of them over a long period. But they struggle devotedly to raise columbine, delphinium, mertensia, campanulas, dahlias, tulips, hyacinths, the most exacting lilies, and even peonies.

It is well known that perennials, the chief glory of northern gardens, burn out in the lower South. Even hollyhocks are difficult to keep over the hot summer, and so far delphinium appears to be impossible.

(Continued on page 399)

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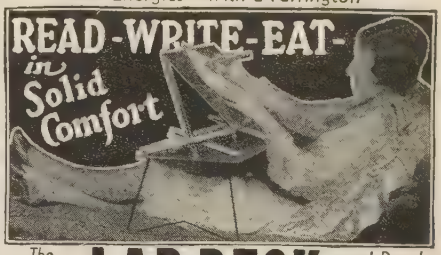

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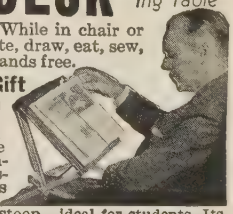

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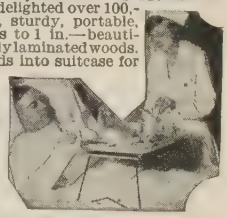

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ARBOR DAY IN TEXAS COMES ON WASHINGTON'S BIRTHDAY

With Arbor Days approaching, Texas is expected to show the way in tree planting to mark the bicentennial of the birth, in 1932, of George Washington, because in that state Arbor Day comes on February 22. The plan of the American Tree Association, which is directing the tree planting phase of the bicentennial program for the George Washington Bicentennial Commission, is to get the trees planted now and have the dedication program in 1932.

Why not a Washington memorial tree in every school yard? Why not a memorial avenue in every town? The State forester, E. O. Siecke, is now busily developing plans for widespread tree-planting activities throughout the state. Many Chambers of Commerce and Boards of Trade are interested in inspiring some form of tree-planting observance of the anniversary. At Amarillo, Texas, the Amarillo Garden Club, of which Mrs. L. A. Wells is president, has taken up the tree-planting plan which dovetails with the city's beautiful program under way there. In Palo Pinto county, Mrs. Sam Whatley of Mineral Wells, as chairman for forestry, natural scenery, highway and memorial tree planting, is pushing the program. Masonic Lodges throughout the state are making plans to plant in memory of the first president and the call has been sent to Rotary Clubs, Kiwanis Clubs, Lions Clubs as well as to the Daughters of the American Revolution, fraternal and civic organizations.

In neighboring Oklahoma, the Lions Club of Ada guarantees five thousand trees in that county. The Lions there were quick to see the community asset in tree planting. The plan includes organization in advance and the making of a civic holiday of the tree-planting program.

Educators see a great opportunity for furthering Americanization and citizenship in the bicentennial tree planting. Francis P. Blair, superintendent of public instruction in Illinois, has sent a special bulletin to the teachers of the state. In Pennsylvania the call has gone out to the teachers through the department bulletin. New Jersey has sent the word through the educational channels of that state.

Women's clubs in many states have made the bicentennial tree planting one of the projects for the new year. State conventions have been held or are being held and to these meetings hundreds of bicentennial tree-planting books have been sent by the American Tree Association. Thus the message is reaching every club. Teachers' institutes, too, have received the suggestion for tree planting and normal schools have placed the idea before students about to go into the field.

The editorial indorsement of the plan for bicentennial tree planting continues. On the value to the youth of the country the *Republican* of Phoenix, Arizona, says:

"Although the celebration of the bicentennial anniversary of the birth of George Washington will not be held until February 22, 1932, plans for the nationwide affair are well under way. It should be one of the greatest events in the history of the United States.

"The idea of including the school children in the celebration is an excellent one. If carried out universally throughout the republic, that one phase of the bicentennial will do more to install patriotism and loyalty to the country in the hearts of young America than any other thing we might do in that direction.

"The plan to bring the younger generation into the celebration is simple. It involves only the planting of a tree this fall or next spring in every school yard in the United States in honor of the first president. This tree is to be named the George Washington tree. When the bicentennial celebration is held February 22, 1932, each of these trees will be dedicated with appropriate exercises. It will stand thereafter as an individual living monument to Washington.

"The huge task of directing the planting of these trees has been gladly assumed by the American Tree Association. It also has undertaken to direct the planting of trees in the yard of every home in honor of Washington. It is hoped by those directing the movement that more than 10,000,000 trees will be set out in honor of the hero of the Revolutionary War. A finer tribute to our first chief executive could not be paid.

"A real live growing tree in every school yard, named the George Washington tree, dedicated with impressive ceremonies in the presence of the entire group, is something that will not fail to stir the imagination of every school child. It will be an event that will never be forgotten."

Virginia, "Mother of presidents" and Washington's state, has planted the first tree for her famous son. Governor John Garland Pollard called on the state to plant between now and 1932 and to set a fine example by placing a tree in the grounds of the capitol at Richmond. The plans were in charge of the Wakefield National Memorial Association of which Mrs. J. Allison Hodges is the state regent. Every state might well follow the example of Virginia and place a Washington memorial tree in the capitol grounds and with a program in which the school children could have a part.

Every reader of this page is named a committee of one to pass the word along in regard to bicentennial tree planting. Set the good example, too, by planting. The year of celebration will soon fade into memory unless something of a permanent nature is done. Plant the trees as your part of the record. Tree planting is the one way by which every individual can erect a living memorial to the Father of His Country.

ARBOR DAYS TO COME

Texas—February 22
Florida—First Friday in February
Georgia—First Friday in December
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BIRD HAVEN RESEDA, Calif.

TEXAS—GARDEN LAND

(Continued from page 397)

It blooms and it dies. Yet there is a native delphinium that does live over. Two amateur gardeners are endeavoring to cross this delphinium with the Wrexham sort so as to secure the resistance of the one and the size of the other. Texas has also in a few shaded ravines a native columbine. This fact encourages gardeners to believe that improved varieties will thrive if given enough water and shade. Some perennials are satisfactorily treated as annuals, the seed being planted in September or October. Dahlias bloom in the high altitude of west Texas as large as in New Mexico—where they are perfection—but in southeast Texas are hardly worth their trouble. Yet that trouble is taken, and with increasing success. Where tubers will not carry over, seeds planted annually give a fair return.

Certain shrubs of the North and the Old South appear very desirable to Texas gardeners. Among them are azaleas, camellias, rhododendrons, lilac, hydrangea, and *Daphne cneorum*. Azaleas and camellias are being planted, though not yet extensively. But these shrubs, and rhododendron too, require an acid soil, and much Texas soil is alkaline. Some garden lovers are flying in the face of Nature with considerable triumph. To fly, they dig. They remove the natural soil to a depth of some two feet, introduce a layer of charcoal to discourage the most up-working of earth worms, and build a soil of sand, hardwood sawdust, leaf mold, and commercial alum. Hydrangeas will bloom profusely in a north exposure if the ground is soaked every day of the flowering season. To many in-comers from the North, lilac is the sweetest of garden fragrances; and they plant lilacs here where they bloom but sparsely and in some years not at all. The difficulty, an uncongenial winter temperature, appears unsurmountable.

The mood of the Texas gardener is the high enthusiasm of the empiricist. Rather, that is his mood in April. By August, tired of dragging the hose from one hydrant to another, he determines to keep to shrubs, and those chiefly native.

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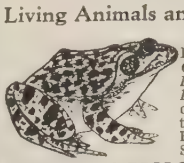

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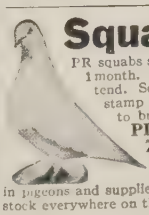

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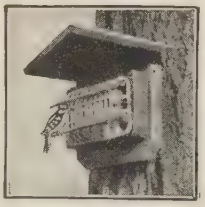

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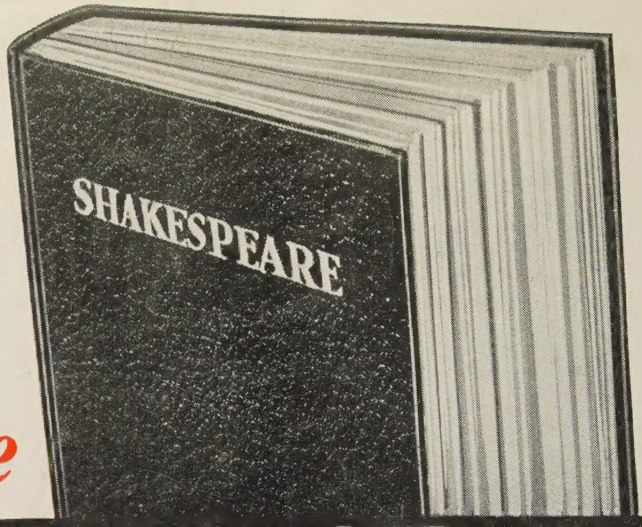

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